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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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The I.C.I. Labour Programme

THE Labour Programme of Imperial Chemical Industries, official details of which, as explained by Sir Alfred Mond, are published in this issue, is distinguished for its progressive and far-seeing qualities. Like all the schemes produced by the same class of mind, it is based on sound science, sound business, and—what is equally important—sound knowledge of human nature and especially of labour psychology. Its main features are the maintenance of personal contact between the directing minds and a body of 40,000 workers; systematic education of the latter in the work and aims of the vast organisation, with the object of giving even the humblest a conscious interest and pride in its success; the reward of personal industry by the grant of improved status and security of tenure; and attractive facilities to the workpeople to become shareholders. It is a scheme carefully framed by the most constructive minds in British industry. One may be excused for feeling some satisfaction at the fact that the proprietors of THE CHEMICAL AGE and its allied journals have anticipated most of Sir Alfred Mond's proposals, and that the principles of personal contact, improved status for efficient workers,

annual bonus on profits, the development of social relations throughout the staff, and special facilities for becoming shareholders on preferential terms have for some years been characteristic features of the Benn Brothers organisation. The results are conclusive in their testimony to the wisdom of such arrangements.

The basic principle of the scheme is the securing of stability and contentment throughout the entire staff as the best guarantee against industrial trouble, and the recognition of labour as an essential element. It is no secret, as Sir Alfred Mond's statement shows, that the directors have been impressed by the extent to which the American worker is financially interested in the business in which he is engaged. A high authority on American industry, in some conversation with us on this point recently, contrasted to our disadvantage the American with the British attitude. The idea there is to make every worker feel that the business is his own, that its success is his own success, that its loss is his loss also. This proprietary feeling, even when based on only a few shares, dominates the mental attitude, and sets up a natural bias against any measures likely to disturb the business. When the chairman drives up to the works, he is to the shareholding worker, not the capitalist parasite who lives on labour, but a fellow-worker in the same business. This attitude is immensely reinforced if the workers are frankly taken into the confidence of the directorate on questions of policy, and especially as to difficulties which the concern may from time to time have to face. Instead of regarding themselves as mere impersonal "cogs" in a machine, the workers come to see things from a common point of view with the directorate, and acquire a personal interest in the concern. This is recognised as an invisible asset of immense value by Imperial Chemical Industries, and the scheme, beginning with its works councils, which cover the whole organisation and link up every section, and ending in the co-partnership proposals, is intended to give every type of worker a personal status and share. It sets an excellent standard and example in the management of business, whether large or small.

The modern combine, no doubt, has its perils. The larger the organisation, the greater is the need of adequate directional brain power. Where this is present—and in Imperial Chemical Industries its continuance is provided for as far as is humanly possible—the results are what Sir Alfred Mond describes them to be. These amalgamations secure the best economic results for both capital and labour, and may bring real benefits to the consumer. Unsuccessful businesses cannot pay adequate wages, cannot maintain the best processes, cannot cope with fluctuations of markets, prices, and similar conditions; and nothing is more

certain to produce labour distrust than the feeling that matters are ill-managed at the top. The perfect alliance of science and industry, which the great chemical fusion represents, commands the confidence of all who know its history and its personnel. Its new Labour programme will confirm the feeling that its directional resources are fully equal to the vast responsibilities it has undertaken.

Colour Standardisation

INDUSTRIAL research may be broadly divided into two categories: the first, which always seems most prominent to the inexperienced eye, is the discovery of new products and processes; while the second is concerned with standardisation and testing. These two latter operations are probably the most important of all. Before we can deal satisfactorily with any industrial product we must be in a position to measure its properties and give them a definite numerical value; then, and only then, is it certain that exactly similar products can be produced at will. Of all the physical properties which arise for consideration, colour seems to be the most troublesome. Its standardisation and testing have been a necessity for years, and have been the source of endless argument. The rise of the dyestuff industry, and the increase of application of scientific method in the paint and allied industries, have brought matters to a head: the problems are now being attacked from so many angles that solutions sufficient for the practical needs of the present time will probably soon be forthcoming.

The Oil and Colour Chemists' Association is, of course, much interested in the questions discussed above; and, with its usual thoroughness, it arranged that the discussion held on Wednesday under its auspices, on "Colour Standardisation and Testing in the Paint and Colour Industries," surveyed the subject from every point of view. In addition to its own members and representatives of other bodies connected with the painting and decorating trades, there were also present (among many others) Professor L. C. Martin and Mr. J. Guild, who discussed the subject from the standpoint of the physicist; Mr. R. S. Horsfall, who dealt with dyestuffs; and Dr. S. G. Barker, who presented the point of view of the textile industries. From the physical point of view, it appears that the trichromatic theory of colour measurement is fairly complete. The Guild colorimeter provides a means of colour measurement, and, consequently, of standardisation. Mr. Guild, however, was the first to point out that his instrument did not solve all problems of colour. On the contrary, it can only assist in the solution of problems. Incidentally, Mr. Guild also offered objections to the view (apparently held by some industrialists with whom he had come in contact) that methods of measurement evolved by scientists were always unnecessarily complicated. This is especially important in regard to the measurement of colour. Such a complex phenomenon can hardly be susceptible to rule-of-thumb methods of treatment.

The main points which crystallise out of the discussion are the following: In the first place, there must be agreement in regard to a definite system of colour standards, to which numerical values can be attached. This alone, however, is not sufficient: the methods of

colour measurement must also be standardised, so that a definite method is used for each kind of measurement; investigations carried out by different observers will then be comparable. Finally, there must be international agreement in these matters. This point was ably developed by Dr. Barker. He mentioned, as an example, the work on the fastness of dyestuffs which is being carried out in various countries. The Germans and the Americans have both worked out classifications of fastness; unfortunately, the two classifications are different, which can only lead to confusion. The important lesson taught by this incident should not fail to impress itself on the paint industry.

Healthy Trade Returns

THE air of optimism which prevails in the chemical industry is such that the Board of Trade returns are now anticipated in a spirit of hope, and not, as was the case some time ago, a spirit of dread. The imports for the month of September, as regards chemicals, drugs, dyes and colours, amounted to £1,091,633, a decrease on last year, but an increase on 1925. Exports amounted to £2,043,285, a considerable increase on both 1926 and 1925; while re-exports of imported merchandise were almost equal in value to the combined totals of September, 1926, and September, 1925. As regards exports, large increases are to be observed in coal tar products (£269,290 in 1927, £69,680 in 1926, and £88,434 in 1925), and sodium compounds; and smaller ones in ammonium sulphate, potassium compounds, and painters' colours and materials.

The expansion in the coal tar products trade deserves detailed reference. In the month of September, in the years 1925, 1926, and 1927 respectively, exports have been as follows: Benzol and toluol, 473 gallons, 526 gallons, and 860,271 gallons; tar oil, creosote oil, etc., 1,153,569 gallons, 933,472 gallons, and 4,412,574 gallons. The most marked increases in ammonium sulphate exported were to Japan and the Dutch East Indies. As regards re-exports, the main increase given is that under the sub-heading "all other sorts" of chemical manufactures and products, which has increased from £12,072 in September, 1925, to £86,101 in September of this year. Where imports are concerned, increases are to be noted in the paint section, in the dyestuffs section, and in potassium compounds. In view of what has been said above, it may be noted that the value of imported coal tar products amounted to £59,209 in September, 1925; to £177,632 in September, 1926; and to £21,729 in September, 1927.

The chemical industry is clearly showing signs of returning health. Moreover, it deserves to be noted that there is every appearance that the present movement will continue. For some years past organisation has been improved, and much spade work has been done. The results have been slow in coming, but at last they seem to be in sight.

Beetle Products

WHEN the British Cellulose and Chemical Manufacturing Co. changed its rather cumbrous name into British Celanese, everyone felt it was a change for the better, since the new title was itself a pleasant one, and served as an excellent trade name for the company's chief commercial product. If the British

Cyanides Co. could think of some happier title than Beetle Products for the attractive articles produced by its subsidiary company from synthetic resins, the change would probably be beneficial, for the existing title inevitably suggests other things not so attractive. It is not suggested that the results in this case would be parallel with those in the other, but a good article deserves a good name and generally gains from its adoption.

Apart from this incidental but not wholly unimportant point, the company is to be congratulated on the distinctly improved position disclosed at the annual meeting. The reduction of capital, the conversion of an overdraft into a substantial balance, the sounder position in which the prussiate business has been placed, and the contracts in hand up to the end of 1928 are matters that appear to justify confidence. The most interesting development, however, promises to be in connection with the product thiocarbamide or thiourea, and the great variety of wares—resembling the Bakelite class in appearance, though not in chemical composition—manufactured from its derivatives. At Wembley, when these were exhibited together with samples of the company's colourless synthetic resin, they attracted considerable notice from American visitors who made energetic efforts to demonstrate that they could be broken. The ware, as the makers admit, is not unbreakable, but, as the American visitors found, very nearly so; it is non-inflammable, a non-conductor of heat, and light in weight. The moulding powders are apparently becoming well known; and there are distinct possibilities in connection with the textile industry, though these are not precisely indicated. The position is interesting, not only financially, but as an example of the advance in synthetic methods, and many will hope that Mr. Kenneth Chance's expectations for the coming year will be realised.

Progress in Chemical Change

MR. C. J. T. CRONSHAW, in his opening address to the Manchester Section of the Society of Chemical Industry, indicated the surprising way in which chemistry as applied to industry is constantly destroying in order to reconstruct, and making valuable things obsolete in order to replace them by things of even greater value. In no industry are these changes so frequent and so rapid, and in none therefore is the readiness to conform to new conditions and needs so imperative. The function of chemistry is, as Mr. Cronshaw put it, to improve on nature, not in the perfection of its processes but in the rapidity of their action, for while nature acts in units of a year, a generation, or a century, modern chemistry reaches its goal in terms of weeks and months. Synthetic resins have come to make good the shortage of natural resins and gums, in artificial silk cellulose has out-distanced the output of the silkworm, synthetic methyl alcohol and acetic acid have dispensed with the former wasteful destruction of cellulose, and synthetic petrol indicates possibilities almost without limit. So many researchers in these fields are lost in the technical intricacies of their work that its importance is apt to be overlooked, and it is well that occasionally they should be reminded, in a temporary pause, of the immense industrial and social effects produced by their silent work.

Books Received

- LUBRICATING GREASES. By E. N. Klemgard. New York: Chemical Catalog Co. Pp. 198. \$5.50.
THE BASIC INDUSTRIES OF GREAT BRITAIN. By the Rt. Hon. Lord Aberconway. London: Ernest Benn, Ltd. Pp. 390. 25s.
SIR ISAAC NEWTON. (Benn's Sixpenny Library.) By V. E. Pullin. London: Ernest Benn, Ltd. Pp. 80. 6d.

The Calendar

Oct. 12-22	Exhibition of Inventions.	Central Hall, Westminster, London.
14, 21 & 28	University of London, University College: Three Public Lectures on "Hydrogen Ion Concentration." Dr. Phyllis M. Kerridge. 5 p.m.	
15	North of England Institute of Mining and Mechanical Engineers. 2.30 p.m.	Lecture Theatre of the Institute, Newcastle-upon-Tyne.
16-27	Société de Chimie Industrielle: Seventh Congress of Industrial Chemistry.	Paris.
18	Sheffield Metallurgical Association: "Electric Welding." A. H. Goodger. 7.30 p.m.	Sheffield.
18 & 19	Society of Glass Technology.	University, Sheffield.
19	Institute of Chemistry (London Section): "Chemists and Dividends." S. M. Gluckstein (a director of J. Lyons and Co.). 8 p.m.	30, Russell Square, London.
19	Chemical Engineering Group. Joint meeting with the Glasgow Section of the Society: "The Desiccation (de Vecchis) Process of Beet Sugar Manufacture." C. Scott Garrett and G. W. Riley. 7 p.m.	Ca'doro Restaurant, Union Street, Glasgow.
19	Society of Dyers and Colourists (Midlands Section). Joint meeting with the Society of Chemical Industry: "Soaps in the Textile Industry." John Allan. 7.30 p.m.	University College, Nottingham.
20	Society of Dyers and Colourists (West Riding Section): "Concerning Chemical Conundrums." Dr. E. F. Armstrong.	Midland Hotel, Bradford.
20	Institute of Metals (Birmingham Section): "Isotopes." Dr. F. W. Aston. 7 p.m.	Engineers' Club, Waterloo Street, Birmingham.
20	Chemical Society. 8 p.m.	Burlington House, Piccadilly, London.
21	Institute of Chemistry: Council Meeting.	30, Russell Square, London.
21	Institute of Chemistry. Joint Meeting with the Society of Dyers and Colourists (Manchester Sections): "Light and Life." Professor E. C. C. Baly. 7.15 p.m.	36, George Street, Manchester.
23-26	Marcelin Berthelot Centenary Celebrations.	Paris.
27	Institution of the Rubber Industry (Manchester Section): "Transmission and Conveyor Belting." W. A. M. Keith.	Geographical Hall, The Textile Institute, Manchester.
27	Institute of Chemistry and Society of Chemical Industry (Edinburgh Sections): Inaugural Address—"Chemistry the Slave of the Lamp." J. Adam Watson. 7.30 p.m.	North British Station Hotel, Edinburgh.
28	Physical Society. 5 p.m.	Imperial College of Science, South Kensington, London.
28	Society of Chemical Industry (Liverpool Section): "Merseyside and Chemical Industries." Dr. A. Holt. 6 p.m.	Muspratt Lecture Theatre, University, Liverpool.
28	The Manchester Literary and Philosophical Society: 7 p.m.	Manchester.
28	Physical Society. 5 p.m.	Imperial College of Science, South Kensington, London.
28	Institution of Chemical Engineers: "Crystallisation." Sir Wm. Bragg.	Institution of Civil Engineers, London.
28	West Cumberland Society of Chemists and Engineers: "Use of Explosives in Mining and Quarrying." J. E. Lambert. 7 p.m.	Technical College, Workington.

The Labour Programme of Imperial Chemical Industries

By Sir Alfred Mond, M.P., Chairman

The announcement printed below will undoubtedly arouse great interest. The number of workers employed by I.C.I. is about 40,000, and the scheme outlined by Sir Alfred Mond is intended to give them good conditions of labour, promotion to a Staff Grade as a reward for good service, and an opportunity of participating in the activities of the company as shareholders.

THE history of most of the industries which have now been amalgamated in Imperial Chemical Industries has been a happy and peaceful one, and almost entirely free from industrial disputes. Those conducting them have always regarded those working with them in any capacity as fellow-workers in a common cause. In commencing a huge concern like this, there are many problems to think about, particularly in the earlier stages. One was the importance of the organisation of the Labour position. For we have something like forty thousand workmen and workwomen spread through a large number of factories of different sizes throughout the length and breadth of the country.

The speed with which the programme has been formulated is fortunate because during the last few weeks the movement towards industrial peace has received a great impetus. There is not only a new spirit, but also a new task in industry. The influences made themselves felt at the last sessions of the Trades Union Congress. The movement towards industrial peace, the plea I have so often made for a League of Industrial Peace, is growing apace. Many who but a few months ago were not prepared to co-operate are now anxious to do so. I trust that the concrete proposals which Imperial Chemical Industries have now put forward will prove a lead to other companies and to other industries.

The Central Labour Department

To give effect to the purpose of having a common labour policy throughout all the works of Imperial Chemical Industries, a Central Labour Department has been established. The Board attach the greatest importance to the unification of all labour matters, and the Central Labour Department and all labour questions will be under the personal direction of Mr. Henry Mond, who is an executive director of the combine. He is largely responsible for the details of the proposals, and always has taken and will continue to take a direct, keen, and personal interest in all questions affecting the relations between the company and its workers. Mr. Henry Mond will be assisted by Mr. R. Lloyd Roberts, our chief labour adviser, who has occupied that position with Brunner, Mond and Co. for many years, and who also has been secretary of the Chemical Employers' Federation for a long period.

One of the problems which troubled me before I decided on the merger, and one which is essential to the successful working of large combinations, was how it would be possible to maintain personal contact between those directing the industry and those employed. That personal contact I have myself enjoyed for practically a lifetime, throughout my connection with Brunner, Mond and Co., where we have built up from small beginnings. That contact has been maintained from father to son between the heads of the firm and those working in the firm. The loyal co-operation of those working with us is an item which figures in no balance sheet and no accountant can value. But all those engaged in industry need it, and it is perhaps the most valuable asset that any company can possess.

Works Councils

We have been very fortunate in our career of fifty years in our maintenance of those contacts and happy relations, not merely in Brunner, Mond and Co., but in the chemical industry generally. I think we may claim that throughout our career we have always been leaders in the amelioration of conditions. We were the first to introduce the eight-hour day and continuous work, and I think we were the first company to start the idea of holidays with pay and other improvements of that nature. In Brunner, Mond and Co. for many years we have had running successfully works councils, which have been the means of maintaining personal and amicable relationship. The workers have appreciated the operation of these councils and the Board have found them a fruitful means of information and consultation. Works councils will now be set up in all the works of the combine, to provide a direct link between the Board of Imperial Chemical Industries and the workers of the remotest works.

There will thus be created a direct bond between the head of the company and the workmen, through a properly formed organisation. This is a new and bold experiment. I personally am sanguine that this system will be of very considerable assistance. I find that more difficulties occur through misunderstanding than from any other cause. More labour troubles arise, not from any deliberate ill-will on either side, but from want of comprehension of each other's point of view.

Apart from the importance of maintaining contact, another problem which affects all industrial relations is that of the status and security of the worker. A complaint which is always raised is that due recognition is not given to the status of the worker. By the system of Works Councils and by the inauguration of a Staff Grade of workers, which is to be established, any ground for complaint will be removed. This is an innovation which, as far as I know, is quite new in any private concern. It means promotion as a reward for good work and service, by giving a man who has given years and good service a greater certainty, and security and status, than that of merely a weekly paid worker. Further, the co-partnership plans which have functioned in various of the companies with considerable success are being unified in a workers' shareholding scheme, which is designed to encourage all ranks of workers to obtain a direct financial interest in the company.

It is a plan adapted to industry to an extraordinary extent in the United States of America, and that is one reason, I think, why they have on the whole less discontent and labour disputes than we do. The idea is to make your workmen co-partners with you, and provide facilities for them to invest in the business in which they are helping to produce the profits. I have always said you cannot make the world more prosperous by making the rich poorer. What you want to do is to make the poor richer. The real solution of an industrial problem is not to be found in destroying the capitalist, but in making the worker a capitalist. We have had a very encouraging experience in the past in Brunner, Mond and Co. and in Nobel Industries. In Brunner, Mond and Co. in three years we had a total of 1,802 applications for shares from staff and workers, and 138,249 ordinary shares were allotted on these applications. In a year in Nobel Industries there was a total of 1,608 applications, 689 from staff and 919 from workers, and 70,179 ordinary shares were allotted. We shall now extend this opportunity to the whole of the employees of Imperial Chemical Industries, and workers, instead of investing in their subsidiary companies, will have an opportunity of investing in the merger company.

An I.C.I. Magazine

Another point arises, how can we make all this large body of people engaged in very manifold and various industries, and widely spread geographically, feel that they are now one corps in the progress of industry? We propose to institute a works magazine which will consist of a 64-page illustrated monthly, to deal with all matters of interest to the workers, their social activities, the conditions affecting the prosperity of their industry, to keep them in close touch with all activities of their fellow workers throughout Great Britain, and make them feel that they are a band of brothers working with the Board and the management for the prosperity of their industry.

These five points in our Labour Programme are but the first instalment of the workers' programme of Imperial Chemical Industries. The keynotes are personal contact, improved status and increased security, co-partnership, and information. But I do not consider all this as complete. The other proposals which have been made and which are being investigated and considered at present will be decided on the same broad lines of policy. All those engaged in working for the company are co-partners. Successful industry to-day requires a team spirit. The team spirit cannot be acquired unless labour policy is based upon the recognition that all concerned can equally make or mar the success of an enterprise. From this recognition grows the consideration that the treatment of all concerned must be equitable.

I have been speaking on the subject of industrial peace for some years, and it is very near my heart. Surveying as I do, an enormous field of British industry, and being able to judge the disastrous effect on British trade of trade disputes, it seems to me absolutely essential if we are to maintain the position of Britain in the world's markets, that those who are co-operating in the production of British goods should stand shoulder to shoulder. You cannot create industrial peace by conversations, talks, luncheons, dinner parties and conferences. Industrial peace can be created only by those responsible for industry, and those responsible for labour, frankly accepting the position we are in, and working out practical schemes which will be of use to both parties and will give benefits to industry as a whole.

I have on many occasions advocated the advantages which amalgamations offer. Modern amalgamations are created for the purpose of realising the best economic results which both capital and labour will share to the best advantage. Unsuccessful businesses are unable to pay adequate wages, and they have no benefits to offer those who operate them. It is only successful businesses which are in a position to offer to those engaged in them security of work, good wages, and shares of different kinds in the prosperity. Amalgamations enable varieties of industries to form an insurance against fluctuations of markets and prices in individual products. For the worker, as well as for the shareholder, fusion acts as a form of insurance against those risks in industry which are inherent and cannot be avoided. Fusions stabilise both employment and prices.

The achievement of industrial peace cannot be hastened by the desires of enthusiastic amateurs or disillusioned politicians. It can be secured only by the competence of those in whose hands are placed the responsibility for industrial reorganisation. There is a new spirit and a new science required in the management of industry. That we have endeavoured to apply to the chemical industry. That is the broad avenue to industrial prosperity and to industrial peace.

Details of the Labour Programme

1. Central Labour Department

To give effect to the purpose of having a common labour policy throughout all the works of Imperial Chemical Industries, a Central Labour Department has been established. It will be under the direction of Mr. Henry Mond, one of the executive directors of the company, who will have as his chief labour adviser Mr. R. Lloyd Roberts. Its exclusive purpose will be to deal with all questions affecting the relations between the company and its workers. It will be administered by specialists, and will have the assistance of an advisory committee, consisting of those officials of the constituent companies whose duty it is to administer the labour policy at the various works. This committee will secure the necessary interchange of view between those who frame the policy and those who execute it.

2. Works Councils

Works Councils, which have already functioned with great success in the works of one of the constituent companies, will be set up in all the works of the combine. These Councils, which will be of three forms, will provide a direct link between the board of Imperial Chemical Industries and the workers in the remotest works, and will be representative equally of the management and of the workers.

(a) *The Local Works Council* consists of an equal number of management representatives and of workers' representatives from one works and deals with all local matters affecting the workers at that works. It meets at a fixed time and date each month. The workers, therefore, know that there are regularly fixed and officially appointed occasions when they have the opportunity of raising any matter for discussion with the local management. The meetings also provide opportunities for the management to inform the workers on such questions as the output and programme of the works, and general matters affecting the industry.

(b) *The General Works Council* is similarly constituted of an equal number of management representatives and of workers' representatives, but its members are appointed from and by the various Local Works Councils of the workers of that constituent company. Thus the Local Works Councils from

works of the Brunner Mond, Nobel, British Dyestuffs, and the United Alkali groups each appoint a General Works Council for their respective group. The functions of the General Works Councils are similar to those of the Local Works Councils, but matters of general interest to the workers of the whole group of works are dealt with, instead of purely local matters affecting a particular works.

(c) *The Central Works Council* is also similarly constituted of an equal number of management representatives and of workers' representatives, but its members are appointed from and by the General Works Councils. It therefore is a body fully representative of the management and of the workers of the whole of Imperial Chemical Industries, Ltd. Its chairman is the chairman of the combine. It is intended that the Central Works Council shall meet regularly in London, to discuss any matters raised by the workers, and to give the directors the opportunity to consult and discuss with the workers on questions affecting their general well-being.

3. Works Magazine

In order to maintain and increase contact and consultation between all the co-partners in the prosperity of the company, a monthly sixty-four page illustrated magazine is to be established, which will deal with all matters of interest to the workers, particularly on their social activities. It is felt that this periodical will acquaint those engaged in the operations of the company from one end of the country to the other with the doings of the others employed, and will make them all feel they are a band of brothers.

4. Staff Grade of Workers

A staff grade of workers is to be established for the purpose of giving the best workers a greater economic security and a higher status than they have had previously. All men of five years' service and over will be eligible for promotion to the staff; such promotion to be made annually by the directors. It is contemplated that even up to 50 per cent. of the men eligible may be promoted. Those promoted will be paid a weekly wage instead of an hourly rate and will receive the following in addition:—

(a) A month's notice of termination of employment.

(b) Payment of wages for Bank Holidays even if not worked.

(c) Payment of full wages (less National Health Insurance Benefit) for all certified sick absence up to six months in any year.

5. Workers' Shareholding Scheme

For the purpose of encouraging all ranks of workers to obtain direct financial interest in the company, a Workers' Shareholding Scheme is to be applied, in which the following are a number of the points:—

(1) The worker may any day purchase Imperial Chemical Industries ordinary shares at 2s. 6d. below the mean market price.

(2) Free shares will be presented on the following scale:—
To workers receiving £200 a year or less, one free share for every four shares bought; from £201 to £500 a year, one free share for every five shares bought; from £501 to £1,000 a year, one free share for every six shares bought; from £1,001 to £1,500, one free share for every seven shares bought; from £1,501 to £2,000, one free share for every eight shares bought.

(3) If the worker should die before completing his payments, which may be by instalment, spread over two years, the company will take over his obligations and hand the shares fully-paid to his next-of-kin.

(4) The scheme is intended as an investment scheme, and while no absolute restriction is placed upon the workers, they will not be expected to speculate with their shares. The directors, naturally, reserve the right to refuse to allot further shares to a worker who does not enter into the right spirit of the proposal.

(5) The maximum individual allotment to be such number of shares as can be purchased by an expenditure of a sum not exceeding 20 per cent. of the annual wages or salary of the employee. To this 20 per cent. may be added an additional 1 per cent. for each year of service above five. An employee with 20 years' service, therefore, may spend 35 per cent. of his wage or salary, etc.

Chemical Trade Returns for September

Growing Value of Exports

THE latest Board of Trade returns indicate that, as regards chemicals, drugs, dyes, and colours, for the month ended September 30, imports amounted to £1,091,633, a decrease of £141,063 on 1926, and an increase of £133,231 on 1925; exports amounted to £2,043,285, an increase of £396,171 on 1926 and of £229,917 on 1925; while re-exports of imported merchandise amounted to £144,853, an increase of £71,806

on 1926 and of £63,248 on 1925. For the nine months ended September 30 imports amounted to £11,353,265, an increase of £59,740 on 1926 and of £684,803 on 1925; exports amounted to £17,165,999, an increase of £349,361 on 1926, and a decrease of £779,671 on 1925; while re-exports amounted to £753,121, a decrease of £15,644 on 1926 and of £173,889 on 1925. Detailed figures are as follows:—

	Imports		Value.		Quantities.		Value.	
	Month ended		Month ended		Month ended		Month ended	
	September 30, 1926.	September 30, 1927.	September 30, 1926.	September 30, 1927.	September 30, 1926.	September 30, 1927.	September 30, 1926.	September 30, 1927.
CHEMICAL MANUFACTURES AND PRODUCTS—								
Acid Acetic tons	771	883	35,915	37,338				
Acid Tartaric cwt.	1,993	983	9,859	5,357				
Bleaching Materials ..	10,073	15,249	27,231	10,850				
Borax	2,380	8,028	2,674	7,704				
Calcium Carbide ..	62,049	89,649	40,277	54,523				
Coal Tar Products, not elsewhere specified	—	—	177,632	21,729				
Glycerine Crude cwt.	24	541	110	2,078				
Glycerine Distilled ..	117	130	608	578				
Red Lead and Orange Lead	3,059	4,368	6,062	7,585				
Nickel Oxide	—	—	—	—				
Potassium Nitrate ..	12,037	10,105	13,906	11,095				
Other Potassium Compounds	141,877	263,067	54,726	80,366				
Sodium Nitrate ..	16,793	139,739	10,586	81,420				
Other Sodium Compounds	47,128	30,465	39,111	17,426				
Tartar, Cream of cwt.	3,619	2,739	12,650	11,742				
Zinc Oxide	658	1,052	22,715	32,786				
All other sorts .. value	—	—	290,721	213,801				
DRUGS, MEDICINES, ETC.—								
Quinine and Quinine Salts	124,189	272,923	9,669	20,257				
Bark Cinchona .. cwt.	2,383	92	9,213	479				
Other sorts .. value	—	—	118,689	145,986				
DYES AND DYESTUFFS, ETC.—								
Intermediate Coal Tar Products	—	119	—	1,631				
Alizarine	110	43	2,935	1,802				
Indigo Synthetic ..	—	—	—	—				
Other Sorts	2,772	3,715	50,055	84,752				
Cutch	6,580	3,294	8,976	5,748				
Other dyeing extracts,	2,898	2,724	12,658	9,256				
Indigo, Natural ..	—	41	—	926				
Extracts for Tanning ..	106,754	66,216	103,554	63,663				
PAINTERS' COLOURS AND MATERIALS—								
Barytes, ground, and Blanc Fixe cwt.	66,112	56,211	14,997	12,189				
White Lead (dry) ..	12,107	9,156	23,591	13,559				
All other Sorts ..	92,124	99,478	133,576	135,007				
Total of Chemicals, Drugs, Dyes, and Colours value	—	—	1,232,696	1,091,633				
Exports								
CHEMICAL MANUFACTURES AND PRODUCTS—								
Acid Sulphuric .. cwt.	2,160	1,770	2,694	2,351				
Acid Tartaric	2,338	2,832	12,737	18,931				
Ammonium Chloride (Muriate)	246	716	5,738	14,530				
Ammonium Sulphate—To France tons	—	—	—	—				
„ Spain and Canaries ..	1,696	9,525	18,948	89,596				
„ Italy	96	210	1,153	1,984				
„ Dutch East Indies ..	240	1,537	2,794	14,896				
„ Japan	2,551	8,505	29,064	81,163				
„ British West India Islands and British Guiana .. tons	275	682	3,211	6,352				
„ Other Countries ..	4,867	7,147	54,215	72,399				
Total	9,725	27,606	109,385	266,390				
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	Re-Exports		Value.	
	Quantities. Month ended September 30, 1926.	1927.	Month ended September 30, 1926.	1927.
CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Tartaric cwt.	75	100	£ 484	£ 732
Borax	45	30	54	30
Coal Tar Products. value	—	—	2,829	543
Glycerine Crude .. cwt.	—	—	—	—
Glycerine Distilled ..	—	—	—	—
Potassium Nitrate ..	—	—	—	—
(Saltpetre) cwt.	43	61	73	101
Sodium Nitrate ..	6	1,214	7	724
Tartar, Cream of ..	542	503	2,050	2,212
All other Sorts value	—	—	16,737	86,101
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts	19,000	24,685	1,951	2,668
Bark Cinchona .. cwt.	403	200	4,203	789
All other Sorts value	—	—	31,574	39,138
DYES AND DYESTUFFS—				
Cutch	1,811	1,027	2,820	1,593
Other Dyeing Extracts				
Indigo, Natural .. cwt.	137	266	701	1,893
Extracts for Tanning ..	5	7	149	235
PAINTERS' COLOURS AND MATERIALS cwt.	3,472	1,305	4,140	1,752
	1,106	1,595	3,929	5,478
Total of Chemicals, Drugs, Dyes and Colours .. value	—	—	73,047	144,853

Chemistry's Influence on Industry

Changes that Always Mean Progress

THE Manchester Section of the Society of Chemical Industry held its first meeting for the 1927-8 Session on Friday, October 7, when Mr. C. J. T. Cronshaw, B.Sc., the Chairman of the Section, presided. There was a large attendance of members, including Mr. L. Guy Radcliffe, the previous Chairman of the Section, and Dr. E. F. Armstrong.

The Chairman, in an address on "The Seven Lamps of Chemical Enterprise," defined these as being "Research," "Precision," "Service," "Unity," "Judgment," "Leadership," and "Vision." The possible routes, he said, to chemical substances were usually both numerous and varied, and the ultimate choice was made on general economic grounds. Consequently slight changes in price of a few products were sufficient to upset almost a section of chemical industry; and this economic trend might often, further to complicate the position, bring new products into extended use. Moreover, economic factors often played strange tricks, converting useless by-products into the salvation of a moribund industry, and relegating hitherto profitable materials to the background. As the science of chemistry grew and expanded, it robbed, and even as it robbed it bestowed, not unfortunately always on its early victims, great and glittering prizes.

Some Practical Examples of Change

Perhaps such generalisations would more gracefully commend themselves to his hearers if they were supported by some of the specific examples upon which they properly stood. The coal gas industry was probably the classic example. It was an industry which originally, and with no other thought, found its initiative in the provision of an illuminant, and which now held its place, at any rate in coal-bearing countries, by reason of the financial rewards in its coal tar and ammonia. Even this sequence was on the threshold of disturbance by reason of the advance of synthetic ammonia, and it might be that ultimate and final relief was coming by way of low temperature carbonisation. This latter might also constitute a threat to the raw materials of the dyestuffs industry, since the tendency was for by-products to change from an unsaturated character to saturated. The dyestuffs industry almost existed on the presence of the double bond. The production of metallurgical coke had passed through the same stages and had found the same solutions, while one might also quote, though with not quite the same force, the soap industry and glycerine.

These examples were not solely of the past. There was the production by fermentation, during the war, of acetone, with its then almost useless attendant accumulation of normal butyl alcohol. To-day this process flourished and lived by reason of its butyl alcohol, and nitrocellulose lacquer for motor cars was the result. There was, too, the striking development of phthalic anhydride and the synthesis of anthraquinone.

Need of Uniform Standards

Referring to the position of the distilleries in the United States when prohibition became law, Mr. Cronshaw said that new solvents were developed on an abundant scale, the use of alcohol as an anti-freeze in the radiators of motor cars extended, and the so-called solidified alcohol as a solid fuel became almost an industry in itself. Chemical products, particularly organic chemical products, were tending more and more to be sold not for what they were, but for what they would do, and this naturally entailed a uniform standard of performance. Dyestuffs were sold not on their chemical composition, but because they would dye an almost definite weight of textile material to a desired shade, and with a defined degree of permanence to the factors, such as light, acids, alkalis, chlorine, heat, it would have to withstand. The organic rubber accelerators, for example, diphenylguanidine, were sold not so much because they were this or that chemical substance, but because they would in a definite rubber mix effect a satisfactory cure at a definite temperature and within a defined period of time. Many other examples would occur to the members of the Section, such as insecticides, drugs, seed disinfectants, dispersing agents, and wetting out agents.

Chemistry that Outpaces Nature

The ultimate proper function of chemical enterprise was to improve upon nature—a supremely difficult operation—particularly and mainly with respect to the time factor. Civilisation had arrived at such a point of complication that it could no longer afford to wait for nature. Nature acted in units of a year, a century, or a millennium, as the case might be, and the modern trend of chemical enterprise was to reduce this to units of days and weeks. It was interesting to observe that apparently the only section of organic chemistry which had almost completely surrendered to chemical enterprise was that of synthetic dyestuffs, but, essential as they undoubtedly were, dyestuffs, from the standpoint of ultimate national economics, were among the least important of the objectives of organic chemical enterprise. Synthetic resins would certainly have to make up for the inevitable shortage of natural resins and gums; artificial silks already enabled cellulose, nature's largest single production, to replace the patient and seasonal output of the silkworms. Synthetic methyl alcohol and synthetic acetic acid had already enabled us to dispense with the old wasteful destruction of cellulose. Synthetic petrol, in regard to which perhaps we were to-day merely treading on the threshold of possibilities, represented probably the most striking and far-reaching of the results of vision in chemical enterprise.

Upon the motion of Mr. L. Guy Radcliffe, seconded by Dr. E. F. Armstrong, a vote of thanks was unanimously accorded Mr. Cronshaw for his very interesting address.

Institution of Civil Engineers: Prize Awards

THE council of the Institution of Civil Engineers has made the following awards:—The Howard Quinquennial Prize to Professor W. E. Dalby, F.R.S., in recognition of his researches on the strength and structure of iron and steel; the Indian Premium to Mr. A. W. Stonebridge.

For Selected Engineering Papers published during Session 1926-27: A Telford Gold Medal to Sir E. Owen Williams; Telford Premiums to Dr. E. H. Salmon (London); Mr. R. S. Cole (India); Dr. H. Mawson (Liverpool); and Mr. A. H. Douglas (London); and a Crampton Prize to Mr. D. McLellan (Glasgow). For papers read at students' meetings in London, or by students before meetings of local associations: The James Forrest Medal, the James Prescott Joule Medal, and a Miller Prize to Mr. R. F. Legget (Liverpool); and Miller Prizes to Messrs. A. H. D. Markwick (Ferrybridge); F. C. Jordan (London); L. G. B. Rock (London); O. J. Chaplin (Wakefield); and F. V. Cornish (Tankerton).

Society of Public Analysts

At an ordinary meeting of the Society held at the Chemical Society's Rooms, Burlington House, on Wednesday, October 5 (Mr. E. Richards Bolton, president, in the chair), certificates were read for the first time in favour of Messrs. L. V. Cocks, A.I.C., F. Dixon, B.Sc., A.I.C., D. M. Freeland, A.I.C., D. Geoghegan, C. G. Hyde, A.R.C.S., F.I.C., V. J. Tilley, F.I.C., L. Wild, B.Sc., and H. A. Williams; and for the second time in favour of Messrs. C. E. Corfield, B.Sc., F.I.C., H. E. C. Powers, B.Sc., A.I.C., J. D. Rogers, and A. Samson, A.R.C.Sc., A.I.C.

The following were elected members: Messrs. F. C. Bullock, B.Sc., A.I.C., T. H. Fairbrother, M.Sc., F.I.C., R. S. Rack, and S. G. Sherman.

The president announced that the next meeting of the Society, on November 2, would be held, by invitation of the Pathological Institution of St. Mary's Hospital, in the theatre of that hospital.

Abstracts of Papers

In a contribution on "The Oil of *Centrophorus Granulosus*," by Mr. A. Chaston Chapman, F.I.C., F.R.S., it was pointed out that the liver oil of the Portuguese shark, "barroso" (*Centrophorus Granulosus*), contains the unsaturated hydrocarbon, spinacene, an alcohol probably identical with the batyl alcohol found in Japanese shark oils, a liquid alcohol (selachyl alcohol, $C_{21}H_{40}O_2$), cholesterol and glycerol (0.5-0.6 per cent.), together with stearic, palmitic, and oleic acid, and possibly smaller proportions of other saturated and unsaturated fatty acids.

"The Separation of Titanium from Tantalum and Niobium" was dealt with by Messrs. W. R. Schoeller, Ph.D., and E. C. Deering, B.Sc. Previous methods of separating titania from the earth acids were reviewed and criticised, and an outline was given of a more accurate separation method based on the dissociation of the soluble tartaric complexes of the metallic acids by a mineral acid; the earth acids were precipitated, whilst the titanic salt remains in solution. The results as yet obtained were rather approximate, but work aiming at a more exact separation was in progress.

"The Determination of Aldose Sugars by Means of Chloramine-T, with special reference to the Analysis of Milk Products," was the subject of a contribution by Messrs. C. L. Hinton, F.I.C., and T. Macara, F.I.C. Each molecule of chloramine-T, it was stated, was equivalent to two atoms of iodine, both in the oxidation of sugar and in the final liberation of iodine on acidifying. The oxidation proceeded more slowly than that with alkaline iodine solution. The most suitable conditions for the oxidation of dextrose and lactose had been worked out, and the extent of the slight oxidation of sucrose and laevulose under standard conditions determined. The action of chloramine-T on the non-sugar constituents of milk serum had been studied; under the conditions specified it did not cause an error greater than 0.4 per cent. of the total lactose. A procedure was outlined for the determination of lactose in fresh milk and condensed sweetened and unsweetened milk.

Vacant Appointments

Head of the Chemistry Department of the Rutherford Technical College, Newcastle-upon-Tyne. £500-£20-£600. The Director of Education, Education Office, Newcastle-upon-Tyne. October 29.

Professor of Organic Chemistry, Pure and Applied, in the University of Sydney, New South Wales. £1,100. The Agent-General for New South Wales, Australia House, Strand, London, W.C.2. November 9.

A Biochemist for the Development Department of the Government of Madras, to carry out research work on cotton at Coimbatore. Rs.750-Rs.50-Rs.950 per calendar month. The Secretary to the High Commissioner for India, 42, Grosvenor Gardens, London, S.W.1. October 29.

Inspector of Alkali, etc., Works, under the Alkali, etc., Works Regulations Act, 1906. £500-£25-£800, plus cost-of-living bonus. The Director of Establishments, Ministry of Health, Whitehall, London, S.W. October 29.

The Chemical Engineering Group

At a meeting of the Chemical Engineering Group of the Society of Chemical Industry on Friday, Mr. J. A. Reavell read a paper on "A Recent Development of Spray Drying," in conjunction with which a visit was paid to the Kestner Experimental Works at Camberwell, where the plant described was demonstrated. The first provincial meeting of the Group for the current session will be a joint one with the Glasgow Section of the Society, and will be held on Wednesday, October 19, at the Ca'doro Restaurant, Union Street, Glasgow, at 7 p.m., when a paper on "The Desiccation (De Vecchis) Process of Beet Sugar Manufacture" will be read by Dr. C. Scott Garrett and Mr. G. W. Riley. The paper describes the drying of the beet cossettes and the plant which has been specially evolved for this purpose. Economic data are given and the process compared with other existing methods of manufacture. It will form the most complete paper on the De Vecchis process yet offered to a scientific meeting in any country. Members are asked to advise the secretary of the Group of their intention to attend, and, in particular, members from London are invited to do so, in order that they may arrange to travel together. The most convenient train is the "Royal Scot," leaving Euston at 10 a.m., and arriving at Glasgow at 6 p.m.

Belco Finishes at the Motor Show

ON Stand No. 251 at the Motor Show the manufacturers of "Belco," Nobel Chemical Finishes, Ltd., of Slough, have struck a novel note in their exhibit. The background of the stand is formed by a large relief model of the illustrated cover of the booklet, "Belco Motor Car Finishes," which is now well known in the motoring trade. This model, which introduces a striking patch of colour, is made of "Necol" plastic wood, a material which when soft is like putty and when hard is like wood. On the walls of the stand are shown metal panels treated with "Belco," and also wood panels which illustrate the suitability of "Belco" wood finish for motor car dashboards. The car owner has not been neglected, for while at last year's show only eleven authorised refinishers had been appointed to refinish cars in "Belco," there are now well over one hundred authorised refinishers, and there are few parts of the country out of reach of one of the "Belco" refinishing stations. A full list of motor car manufacturers, motor body builders and authorised refinishers who are using "Belco" may be obtained at the stand.

Gas Works By-Products Census

IN the issue of the *Board of Trade Journal* for October 6, the preliminary report on the Third Census of Production, 1924, as affecting gas works undertakings, was given. The total production of by-products was as follows (comparative figures for 1907 are given in brackets): Sulphate of ammonia, 127,000 tons (104,000), value £1,320,000 (£1,060,000); benzol and toluol, 1,953,000 gallons (46,000), value £120,000 (£2,000); naphtha, 570,000 tons (347,000), value £25,000 (£9,000); pitch, 114,000 tons (85,000), value £324,000 (£111,000); tar oil, creosote oil, and other heavy coal tar oils, 21,314,000 gallons (7,856,000), value £617,000 (£84,000); other distillation products, value £194,000 (£213,000). The total value of by-products was £2,600,000 in 1924, as compared with £1,479,000 in 1907. The production of tar was 800,000 tons (635,000), valued at £2,427,000 (£646,000).

British Industries Fair: Boom Year Beaten

THE British Industries Fair, 1928, has beaten all previous records, the total space let over four months before the opening exceeding the area of the previous largest fair, that of 1921, which followed a boom period in trade. A thousand officers of the commercial diplomatic service, trade commissioners, and consuls in all parts of the world, working under the direction of the Department of Overseas Trade, have enlisted the support of British Chambers of Commerce and British communities in their respective countries, and with the enthusiastic aid of British railway, shipping, and tourist companies abroad it is hoped to attract to the record fair a record number of buyers. Fourteen hundred firms have so far applied for space.

Berthelot Centenary Celebrations

BERTHELOT was born in Paris, in the Place de Grève, now Place de l'Hôtel de Ville, on October 25, 1827, and died, also in Paris, on March 18, 1907. The centenary celebrations commence on Sunday evening, October 23, with a reception of the members of the official delegations in the Salons of the Sorbonne. On the following day the guests will be present at the opening of the exhibition of Berthelot souvenirs in the Faculty of Pharmacy, and will visit the savant's monument and laboratory at the Collège de France. There will follow a reception at the Hôtel de Ville, and a commemorative assembly at the Sorbonne. On Tuesday, October 25, the proceedings will commence with a ceremony at the Panthéon; the delegations will also attend a banquet at the Palais de Versailles and a soirée at the Théâtre National de l'Opéra. On Wednesday, October 26, the foundation stone of the "Maison de la Chimie" will be laid, lunch will be taken at Chantilly, there will be a reception by the Institut de France, and the celebrations will terminate with a reception in the Palais de l'Elysée by the President of the French Republic. The arrangements are being made under the presidency of M. Paul Painlevé. The "Maison de la Chimie," which is to be erected in Berthelot's honour, will provide a centre at which various international committees may establish their bureaux; it is intended also to provide a library and suitable accommodation for gatherings of an international character.

Retirement of Mr. F. J. Blight

CHEMICAL engineers and technologists will regret to hear that Mr. Francis James Blight, the chairman and managing director of Charles Griffin and Co., Ltd., publishers, is retiring from the position he has filled for so long. Mr. Blight's association with the firm dates back thirty-three years, during the last twenty-eight of which he has directed its fortunes. This is more than a generation ago, and at that period both chemistry and technology were in a far less developed state than they are now, and specialised literature was sadly lacking. Mr. Blight had the foresight to perceive the omission and to set himself to work to remedy it. In this he was singularly successful. Mr. Watson Smith, then editor of the *Journal of Chemical Industry*, paid him the tribute of saying that Mr. Blight had done, for technical literature generally, what Cassell had done for popular literature. Mr. Blight, who came of an old Devonshire family long associated with publishing, played a part in the development of technical literature, and in his retirement he will carry with him the good wishes of a large number of readers and friends.

Future Plans of the I.G.

THE directors of the I.G., after a meeting held recently, issued a statement with regard to the financial resources which they propose to raise with a view to the projected extension of the works. No conclusion has been reached on the subject. Press reports also state that the I.G. is negotiating with the "Norsk Hydro," the Norwegian nitrogen undertaking. The agreement would involve an exchange of shares, patents, and methods. The "Norsk Hydro" would, if the agreement were ratified, adopt the "Haber-Bosch" process, with consequent expansion of plant and production. The I.G. has already adopted the agreement, while the "Norsk Hydro" will make its decision at the forthcoming annual meeting. It is possible that these activities are connected with the formation of a European nitrogen cartel.

Safeguarding of Key Industries Application

THE Board of Trade give notice that representations have been made to them under Section 10 (5) of the Finance Act, 1926, regarding lithium carbonate, lithium hydroxide, and quinine ethyl carbonate. Section 10 (5) of the Finance Act, 1926, deals with the exemption of articles from the duty imposed by Section 1 of the Safeguarding of Industries Act, 1921, as amended by the Finance Act, 1926. Any person desiring to communicate with the Board of Trade with respect to the above-mentioned applications should do so by letter addressed to the principal assistant secretary, Industries and Manufactures Department, Board of Trade, Great George Street, London, S.W.1, within one month from the date of this notice (October 11).

Power Gas from Sewage Sludge Developments at Saltley

IN a description of the work of the Tame and Rea Drainage Board, on the occasion of its jubilee, it is pointed out that in sewage purification work two classes of organisms perform beneficent work with the utmost efficiency, given a suitable environment and the food necessary for their existence. The first, the anaerobic organisms, are the active agents in the transformation of over 400,000 tons per annum of crude sewage sludge daily to an inoffensive form, which may be dried in the open air without causing a nuisance. It is a remarkable fact that in performing this work some of these organisms produce odourless gases, which under certain conditions may be utilised for power or for lighting purposes. In another direction it is possible to utilise for power purposes the gases given off by the sludge in the digestion tanks. In 1921 an experimental tank was constructed to determine the commercial possibility of this process. The experiment was continued for four years, and constantly improving results were obtained. As the outcome of this research there was installed at Saltley in December, 1925, the first unit of independent power plant in which the motive force was to be gas generated by a biological agency. The gas is collected in reinforced concrete containers which float on the surface of the primary digestion tanks, and is utilised in an internal combustion engine of 150 h.p. to generate electricity. On Thursday, September 29, drainage experts, together with the members of the Drainage Board at Saltley and Mipworth, and Alderman H. J. Sayer, the chairman, formally opened a valve supplying the new engine with gas generated from the sewage sludge by the agency of the organisms.

Corrosion by Oil

Paper Before Institution of Petroleum Technologists

AT a meeting of the Institution of Petroleum Technologists, held at the Royal Society of Arts, London, on Tuesday, Mr. H. J. Young read a paper on "Corrosion by Oil." In this he described a direct oil-corrosion test (called the D.O.C. test). The test is performed by means of an apparatus whereby warm oil is run continuously over warm steel, white metal, brass, copper, or other metal. Mr. H. J. Young stated that by the D.O.C. test as little as 0.002 per cent. of H_2SO_4 could be detected, and the test was equally sensitive to minute amounts of sea-water, alkalis, sulphates, and so on. The alkalis so readily affected white metal that an oil cleaned by alkali would attack white metal even when that oil had been washed three or four times with water. The test thus afforded a means of testing the efficiency of any cleaning process. In this connection it had led to the perfecting of a simple appliance which, inserted into an oil-system, would keep the oil "sweet." The study of compound lubricants as used on compressors was greatly facilitated, and valuable information was being obtained as to the effects of high acid value (oleic), high saponification number, and so on. In practice the D.O.C. test was being used as a means of watching the oils on internal combustion engines for land or marine work, and within a few hours of receiving the sample it was possible to tell the owners whether their oil was becoming dangerous to use.

Anglo-German Chemical Negotiations

SIR HARRY MCGOWAN, K.B.E., president and deputy chairman of Imperial Chemical Industries, Ltd., in a recent interview with the *Financial News*, expressed his regret at the continuous rumours that have appeared in the Press prophesying an early conclusion to his company's negotiations with the I.G. The negotiations were of the sort that must, of necessity, take a long time in concluding. It was true that they were being, and would continue to be, carried on, but expectations of a quick solution of the great variety of problems that had to be covered were of necessity doomed to disappointment. In answer to a question as to whether the I.G. was now occupied in buying shares in Imperial Chemicals, Sir Harry stated that he knew nothing of their having any such intention, but it was, of course, possible that they were doing so on their own initiative. His own company, contrary to general belief, was not buying shares in the I.G. Some time back they bought a block of the German company's shares, but they had bought none since.

From Week to Week

SIR ALFRED MOND will be the chief guest of the Canadian Chamber of Commerce in Great Britain at a luncheon at the Hotel Cecil, on November 10.

DR. E. F. ARMSTRONG, F.R.S., will deliver an address "Concerning Chemical Conundrums" to the West Riding Society of Dyers and Colourists on Thursday, October 20.

DEMONSTRATIONS OF MIXING, VULCANISING, AND TESTING rubber were given by the Rubber Research Association at the third International Exhibition of Inventions this week.

WHILE MOTOR CYCLING TO HIS WORK at the Winnington Chemical Works of Brunner, Mond and Co., Thomas Herbert Moore, aged 24, crashed into a motor lorry and received a fractured leg and injuries to his head.

A NEW WATER-SOFTENER has been placed on the market by Electrolux, Ltd., according to a statement made by Major H. A. Wernher, the vice-chairman, at the general meeting of the company on Thursday, October 6. The production and sale of cleaners, refrigerators, etc., was, he said, proceeding satisfactorily.

THE ANNUAL GENERAL MEETING of the London Section of the Institution of the Rubber Industry was held at the Engineers' Club, on Wednesday evening, when members of the committee were elected and a paper was read by Dr. O. de Vries on "Coagulation, Structure, and Plasticity of Crude Rubber."

BELL'S POLITE AND EVERITE CO., LTD., have commenced large extensions at their works at Widnes, in connection with the manufacture of asbestos-cement pipes. It is stated that the Widnes factory will be the first in the Empire to manufacture this type of pipe, which it is hoped will soon be produced on a commercial scale.

IMPERIAL CHEMICAL INDUSTRIES, LTD., have given £1,000 to the National Playing Fields Appeal. Of this sum £200 is to be allotted to London, and the balance as follows: Ayrshire, £100; Warwick, £100; Durham, £100; Lancashire, £100; Cheshire, £100; Yorkshire, £100; Westmorland, £50; Derbyshire, £50; Staffordshire, £50; and Kent, £50.

SALES OF NITRATE OF SODA reported by the Nitrate Producers' Association for the fortnight ended September 30 last amounted to 306,852 metric tons, for delivery up to June, 1928, increasing the total of such sales since the introduction of free selling to 2,052,179 metric tons (which compares with aggregate sales of 2,149,178 metric tons in the complete nitrate year 1925-26).

THE IMPERIAL AGRICULTURAL RESEARCH CONFERENCE met in London during the week. Eleven specialist committees were appointed. These included a committee on soils and fertilisers, of which Sir E. J. Russell, F.R.S., director of the Rothamsted Station, is chairman; and one on preservation and transport, of which Mr. H. T. Tizard, F.R.S., secretary of the Department of Scientific and Industrial Research, is chairman.

THE AUSTRALIAN NATIONAL RESEARCH COUNCIL has accepted the offer of the Carnegie Corporation to provide £5,000 as the nucleus of a research fund. In addition, the trustees of the Commonwealth Science and Industry Endowment Fund are making £1,250 available this year in small grants for the assistance of scientific workers in Australia, following the lines laid down by the Department of Scientific and Industrial Research in Great Britain. The Commonwealth Fund has an invested capital of £100,000.

THE TRIBUNAL OF ARBITRATION set up under the Finance Act, 1926, to consider the complaint that monocles, eyeglasses, and spectacles had been improperly excluded from the list of optical instruments chargeable with an import duty under the Safeguarding of Industries Act, have decided that spectacles are not optical instruments in the ordinary acceptance of the term, and therefore that they were not included in the schedule of the Act of 1921. They are therefore not prepared to make a declaration for any order for the amendment of the Board of Trade list.

A PARTY OF CHEMICAL STUDENTS from various British universities recently concluded a month of their vacation usefully spent in the works and laboratories of the British Dyestuffs Corporation at Manchester. One of the students said: "It has been a valuable experience which none of us would desire to have missed, and we could wish that other large firms with chemical interests would follow the example of the British Dyestuffs Corporation. We have had practical experience in the workshop as well as the laboratory which will be immensely helpful to us in our future studies."

THE FARADAY SOCIETY will in future publish its *Transactions* in twelve monthly parts of about 48 pages each. The first part will appear in January, 1928, and will be followed by the others normally on the first of each month. In the case of those general discussions the report of which extends over more than one part, two (or more) parts may for convenience be published simultaneously within one cover. The subscription to membership of the Society (including the receipt of the *Transactions*) will remain as before. The *Transactions* will still be available to non-members in the volume form or in parts as issued.

TWO EMPLOYEES at the Offenbach-on-Rhine factory of the I.G. were poisoned, one of them fatally, on October 5, by the escape of phosgene gas from a steel cylinder.

TWO MEN WERE KILLED at Quebec on Monday through the explosion of a quantity of rejected ammunition which was being sorted at the laboratories of the Dominion Arsenal.

WORK HAS BEEN COMMENCED on the first section of the new dyeworks for Joshua Wardle, Ltd., at Leekbrook, Leek, Staffordshire. The contract is being carried out by J. Gerrard and Sons, of Swinton, Manchester.

MR. ALFRED CARTWRIGHT has resigned his seat on the board of Vickers, Ltd., and at a meeting of the board held on October 6 General Sir Noel Birch and Mr. G. G. Sim, the secretary of the company, were appointed directors.

THE BRISTOL SECTION of the Society of Chemical Industry held its first meeting of the new session on October 9, when there was a large attendance to hear an address by Mr. F. H. Carr on "Vitamins in relation to chemistry and medicine."

DORMAN, LONG AND CO., LTD., of Middlesbrough, contemplate opening constructional and bridge building shops in India, and Sir Arthur Dorman, chairman of the company, is shortly leaving for that country in connection with the project.

AN OIL-SHALE BED has been discovered on a farm at Llawhaden, near Haverfordwest, West Wales. Its extent is not yet known, but a London company is carrying out extensive investigations, and, if they prove satisfactory, will work the bed for crude oil.

DR. J. V. N. DORR, who has spent about three months travelling in Europe, arrived in New York on October 1, on the s.s. *Roma*. During his stay in Europe he had conferences with his business associates in London, Paris, and Berlin, and visited many of the industrial centres of Europe with members of his staff.

AN EMPLOYEE at the GASKELL-DEACON WORKS of the United Alkali Co., Richard Clarke, aged 33, was electrocuted by the short circuiting through his body of current from an overhead wire which had fouled a conveyor to which he was holding with his hand. At the inquest at Widnes, a verdict of death from misadventure was returned.

PROFESSOR E. C. C. BALY, F.R.S., will read a paper on "Light and Life" before the Manchester Section of the Society of Dyers and Colourists, at a meeting held jointly with the Manchester Section of the Institute of Chemistry on October 21, at 7.15 p.m., in the lecture room of the Manchester Literary and Philosophical Society. The president of the Society, Dr. H. Levinstein, will take the chair.

THE ISSUE BY BRITISH CELANESE, LTD., of £2,500,000 7½ per cent. convertible second mortgage bonds to bearer at par this week was very heavily over-subscribed. Of the proceeds of the issue, £1,100,000 will be required to purchase the royalty agreements, £286,000 for redemption of the company's 6½ per cent. bonds, and the balance, less expenses, will be available for capital expenditure and general purposes. In a letter to Cull and Co., who purchased the bonds and offered them for sale, Dr. H. Dreyfus (chairman and managing director of the company) said that recent profits, after deduction of debenture interest and royalties (the latter of which would not be payable after October 31), had ranged between £70,000 and £87,000 per month, and the profits for the month of September were estimated at £96,000. When plant for heavy increase of output had been installed (by the middle of next year), the profits, it was estimated, would be £400,000 per month.

UNIVERSITY NEWS.—*St. Andrews*: It has been announced by Sir James Irvine, the principal, that the donor of the anonymous gift of £100,000 to the University was Mr. Edward Stephen Harkness. His donation, said Sir James, has placed St. Andrews in a unique position among the Scottish universities. The degree of LL.D. was conferred on Sir Richard Gregory on October 7.—*Australia*: Professor J. A. Prescott, of the department of agricultural chemistry, Waite Institute, University of Adelaide, has been appointed adviser on soils problems to the Commonwealth Council for Scientific and Industrial Research.—*Hull*: The University College of Hull has been registered as a company, limited by guarantee (public), "to carry on the business indicated by the title." The registered offices are at Maritime Buildings, Alfred Gilder Street, Hull. The subscribers are 21 in number. The certificate of incorporation, operative from October 7, has been received. The University College is now, therefore, a legal entity, and steps are being taken immediately to bring into existence the various bodies responsible for its government.—*Leeds*: Dr. E. F. Armstrong will deliver the Open Lecture, on "Colour, Commerce, and Chemistry," to the Cavendish Society in the Great Hall on November 8.

Obituary

GEORG EICHLER, formerly director of the German Kalisynicat, aged 81.

MR. B. G. WORK, director of the B. F. Goodrich Co., Akron, U.S.A., and of the Continental Caoutchouc and Gutta-Percha Co., Hanover, on August 30, at St. Moritz, aged 59.

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

277,042. PREPARATION AND RECOVERY OF LIGHT OIL OR MOTOR FUEL FROM CRUDE MINERAL OR SHALE OIL, OR TAR OILS OR FROM CARBONACEOUS MATERIALS, PROCESS AND APPARATUS FOR. E. Schultz, 124, Grey Street, East Melbourne, Australia. Application date, March 9, 1926.

Specification No. 254,011 (see THE CHEMICAL AGE, Vol. XV, p. 116) describes a process in which the crude oil is first heated in a retort and the gases passed through a converter at a lower temperature, containing salt, lime, zinc chloride or zinc oxide, and charcoal or coke. The gases are condensed and the condensate treated with acid, neutralised, and fractionated. In this invention, the heavier and lighter fractions of the oil are treated separately, and the material in the retort and the vapour are subjected to the action of converting substances. The latter may consist of montmorillonite, marialite, bentonite, or lime and metallic sodium, or mixtures of these, to which aluminium chloride may also be added. The apparatus is described.

277,048. FINELY DIVIDED SOLID MATERIALS, PRODUCTION OF. J. Y. Johnson, London. From I. G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date, April 12, 1926.

Solid materials are produced in a finely divided state by mixing with aromatic sulphonic acids containing hydrocarbon side chains and grinding the dry mixture. This may be applied to inorganic or organic pigments, soot, sulphur, heavy spar, and other minerals, the products being suitable for the manufacture of colour lakes, printing colours, etc. The hydrocarbon side chains in the sulphonic acids may be open, e.g., ethyl, butyl, propyl, or other radicles, or rings, such as in the sulphonic acids substituted by cyclohexyl and similar radicles, or they may link together two hydrocarbon residues. Suitable compounds are butyl and propyl derivatives of naphthalene sulphonic acids, also dimethyl metanilic acid di- α -methyl- α -naphthylamine sulphonic acid, also condensation products of sulphonated phenols or naphthalene and formaldehyde. The aromatic sulphonic acids are preferably employed in conjunction with turkey red oil. In an example, lithol fast scarlet R is mixed with isopropylated naphthalene sulphonic acid sodium salt and ground with heavy spar to obtain a pigment.

277,098. ARYLALKYL ETHERS WHICH ARE ARALKYLATED IN THE NUCLEUS AND THEIR SULPHONIC ACIDS, MANUFACTURE OF. W. Carpmal, London. From I. G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date, June 8, 1926.

Arylalkyl ethers derived from naphthalene which are aralkylated in the nucleus are obtained by treating a naphthol-alkyl ether with an aralkyl haloid such as benzyl chloride or xylyl chloride. The condensation takes place in the presence of a metal catalyst at a temperature above 100° C. The products are more or less viscous light oils slightly soluble in alcohol and easily soluble in ether, benzene, ligroin, and petrol ether. They may be treated with sulphuric acid to obtain water soluble sulphonic acids which have a very high wetting action. An example is given of the treatment of β -naphthol isoamylether with benzyl chloride.

277,109 and 277,110. ANTHRAQUINONE DERIVATIVES, PROCESS FOR THE MANUFACTURE OF. I. G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany, R. E. Schmidt, 11, Siegesallee, Elberfeld, Germany, and R. Berliner, 131, Varresbeckerstrasse, Elberfeld, Germany. Application date, June 10, 1926. Addition to 244,462 and 244,463.

277,109. Specification No. 244,462 (see THE CHEMICAL AGE, Vol. XIV, p. 185) describes the condensation of 4-substituted-1-amino-anthraquinone and its derivatives with formaldehyde in the presence of sulphuric acid. The primary unstable condensation products are converted into stable products by long standing or by heating. In this invention, the condensation is effected in the presence of a metallic reducing agent such as copper or aluminium, when the reaction

takes place quickly at ordinary temperature. Examples are given.

277,110. Specification No. 244,463 (see THE CHEMICAL AGE, Vol. XIV, p. 185) describes the manufacture of oxidation products from the condensation product described in Specification No. 244,462 (see above). In this invention, the condensation product is oxidised in aqueous suspension with nitric acid or nitrous acid, or a nitrite and acid. Several examples are given.

277,111. CONVERTING DIFFICULTLY SOLUBLE OR INSOLUBLE COLLOIDAL CARBOHYDRATE ETHERS INTO NEW SOLUBLE PRODUCTS, PROCESS FOR. W. Carpmal, London. From I. G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date, June 10, 1926.

In the manufacture of colloidal carbohydrate (cellulose) ethers, these products may be soluble or difficultly soluble, and the object is to convert the latter into new carbohydrate ethers which are relatively soluble. This is done by treating them with a depolymerising agent such as hydrochloric, sulphuric, phosphoric, or oxalic acid, a mixture of zinc chloride and hydrochloric acid, etc. Thus an ethyl cellulose having an ethoxy content of 47-48 per cent. which only swells in benzene or alcohol-benzene, is treated with a mixture of alcohol, water, and sulphuric acid, in which it dissolves after some hours. The solution is precipitated with water, and the product washed and dried. The cellulose ether is then readily soluble in benzene and alcohol-benzene, the solution yielding transparent films similar to those obtained from other soluble cellulose ethers.

277,273. LIQUID HYDROCARBONS AND DERIVATIVES FROM COAL, TAR, ETC., PRODUCTION OF. I. G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date, March 13, 1926. Addition to 247,217 as modified by 249,155.

In Specification No. 249,155 (see THE CHEMICAL AGE, Vol. XIV, p. 527) coal, tar, mineral oils, etc., are converted into hydrocarbons by treating with hydrogen and carbon oxides under pressure and at a high temperature in an apparatus the hot surfaces of which are composed of a metal inert to carbon monoxide, such as copper, silver, aluminium, chromium, manganese, vanadium, or special steels. It is now found that in the cooler parts of the apparatus carbon dioxide may be decomposed with formation of iron, nickel, or cobalt carbonyls. The latter may be carried along with the hot gases and decomposed in higher temperature zones. These reactions may also occur when using other reducing gases, e.g., by the action of hydrogen on phenolic or other oxygenated compounds, which may result in the formation of carbon monoxide. All parts of the apparatus must therefore be made of metals such as the above, or the low temperature portions may be made of low melting metals such as tin, zinc, cadmium, or lead.

277,275. FINELY DIVIDED AZO COLOURING MATTER OR LAKES THEREFROM, PRODUCTION OF. J. Y. Johnson, London. From I. G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date, April 12, 1926.

In the process described in Specification No. 277,048 above, it has been found that in the case of azo colouring matters these may also be obtained in a finely divided state by adding an aromatic sulphonic acid substituted by a hydrocarbon side chain to one or more of the dissolved components of the azo colouring matter, so that the sulphonic acid is present during the preparation of the colour. The process is also applicable to the production of colour lakes from azo dyestuffs. The sulphonic acids may be used in conjunction with turkey red oil or other sulphonated oil.

277,277. AQUEOUS SOLUTIONS OR EMULSIONS OF SOLVENTS OR OTHER LIQUIDS OR SOLIDS INSOLUBLE IN WATER, PRODUCTION OF. J. Y. Johnson, London. From I. G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date, March 10, 1926.

This process is particularly for preparing solutions of emulsions such as are usually prepared with the aid of soaps,

for treating fibrous materials. In this invention, the soap is replaced by sulphonic acids of polynuclear hydrocarbons or salts thereof, substituted in the nucleus by at least one amyl, hexyl, or higher alkyl group. Suitable substances to be dissolved or emulsified in water are hydrocarbons, waxes, oils, etc. The sulphonic acids are obtained by sulphonating polynuclear hydrocarbons substituted once or several times by aliphatic hydrocarbon radicles containing at least five carbon atoms. Other methods of preparing the sulphonic acids are also given, and also examples of the preparations of the emulsions.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention:—254,294 (I. G. Farbenindustrie Akt.-Ges.), relating to benzanthrone derivatives, see Vol. XV, p. 233; 254,903 (A. Reichberg Ges.), relating to reduction of auto-oxidation of oils and fats, see Vol. XV, p. 233; 264,830 (I. G. Farbenindustrie Akt.-Ges.), relating to condensation products of aldehydes and ketones, see Vol. XVI, p. 339; 269,513 (F. Gerlach), relating to electrolytic decomposition of alkali metal chlorides, see Vol. XVI, p. 605; 271,805 (C. Still), relating to elimination of sulphuretted hydrogen from gases, see Vol. XVII, p. 134.

International Specifications not yet Accepted

275,600. ALCOHOL SYNTHESIS. Compagnie de Bethune, Bully les Mines, Pas de Calais, France. International Convention date, August 6, 1926.

The catalyst consists of irreducible metallic oxides containing 2–10 per cent. of nickel, its oxide, or salts. Instead of the oxides, the formates may be deposited on active carbon.

275,622. DIAMINOPROPANOLS. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, August 3, 1926.

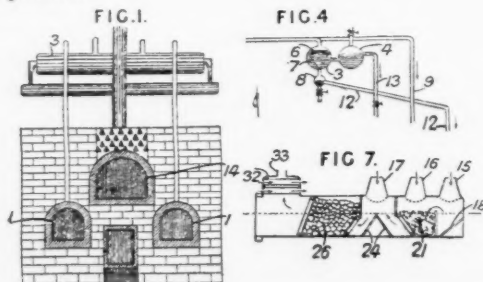
1-amino-3-diethylamino-2-propanol is made by the reaction of epichlorhydrin, water, and diethylamine at a temperature below 30° C. The product is extracted with alkali and distilled in vacuo. The diethylamino-epichlorhydrin thus obtained is heated in an autoclave with a solution of ammonia in methyl alcohol, and the diamino-propanol is fractionally distilled. The production of 1-ethylamino-3-diethylamino-2-propanol, 1-amino-3-piperidino-2-propanol, and 1-amino-3-(phenylmethylamino)-2-propanol is also described.

275,636. DYES. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, August 4, 1926.

Amino compounds of the anthraquinone series are treated with halogen hydrins, e.g., ethylene-chlorhydrin in the presence of acid binding agents with or without condensing agents.

275,642. HYDROGENISING OILS. H. Marchand, Faverges, Haute-Savoie, France. International Convention date, August 5, 1926.

Heavy hydrocarbons such as tar, mazout, heavy oils, etc., are mixed with powdered coal, coke, wood, or lignite, and distilled between 200–800° C. The products are washed, cracked, mixed with the products separated by washing, and hydrogenated.



275,642

The products pass from retorts 1 to a tank 3 supplied with water from a tank 4 and the separated tar flows through funnels 7 at each end into a tank 12. Lighter hydrocarbons are drawn off through a pipe 12, and the gases pass through pipe 9 to the retort 14, Fig. 7. The hydrocarbons, gases, and water from the washing apparatus enter by tubes 12, 9, 13, and domes 15, 16, 17, the hydrocarbons being cracked by

falling on a hot metal plate 18. The products, with the admixed gases, pass through iron turnings 21 to remove sulphuric acid and ammonia, and are then mixed with hydrogen obtained by allowing water from 17 to fall on hot plates 24. The products are hydrogenated in passing through coke and iron turnings 26, and pass off at 33 to a condenser. An example is given of the treatment of a mixture of powdered coal or coke 75 per cent. and sawdust 25 per cent., moistened with potassium carbonate and allowed to ferment, and then mixed with an equal quantity of heavy hydrocarbons and briquetted.

275,662–3–4 and 275,670. DESTRUCTIVE HYDROGENATION OF CARBONACEOUS MATERIALS. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, August 7, 1926.

275,662. During heating with hydrogen at high pressure, deposition of carbon on the apparatus is prevented by a lining of alloy containing cobalt, molybdenum, tungsten, vanadium, manganese, or nickel, together with boron, arsenic, antimony, silicon, bismuth, phosphorus, or selenium. These alloys are also catalysts.

275,663. The catalysts consist of elements of groups 4–8 of the periodic system or their compounds, together with other elements of groups 2–7, or with copper or gold. An example of such a catalyst is molybdic acid and magnesia, copper, or aluminum hydroxide. The reacting materials may be sprayed, or may be in thin layers. Thus, crude mineral oil mixed with a catalyst of ground alderwood charcoal is treated with excess of hydrogen at 450° C. and 200 atmospheres pressure in a vessel lined with chromium-nickel. The vapours of the 50–60 per cent. of middle oils produced are passed with hydrogen at 200 atmospheres and 460° C. over a catalyst of molybdic acid and 10 per cent. of chromium oxide. The condensed product contains 90 per cent. benzene, and may be used as a motor fuel.

275,664. A large excess of hydrogenating gas is used at a pressure of at least 50 atmospheres, and the catalysts contain carbides, active carbon, or metalloids such as boron, silicon, phosphorus, arsenic, selenium, tellurium, or halogens. Phosphoric acid and similar acids may be used, and also silicon carbide, borides, active silica, etc. In an example, crude mineral oil is mixed with aluminium phosphate and treated with a large excess of hydrogen at 420° C. and 200 atmospheres pressure. The vapours of the 60–70 per cent. of middle oil obtained are treated with a large excess of hydrogen in the presence of alderwood charcoal impregnated with phosphoric acid. The product contains 80–90 per cent. of low boiling hydrocarbons.

275,670. Suitable catalysts consist of lead, tin, or precious metals on supports of magnesia, magnesite, or chromium oxide, e.g., ruthenium, palladium, platinum, gold, lead, or tin on magnesia or magnesite, and platinum or gold on chromium oxide. Methane or water vapour may be employed instead of hydrogen.

275,672. TITANIUM COMPOUNDS. J. Blumenfeld, 16, Addison Crescent, London. International Convention date, August 9, 1926.

A solution of a salt of titanium, thorium, zirconium, tin, cerium, etc., is hydrolysed in the presence of colloidal particles of a compound of the metal formed in or added to the solution. The colloidal particles may be obtained by a hot concentrated crystalline solution of titanium sulphate to 25 per cent. of its volume of hot water. A yield of 80–95 per cent. of the oxides is obtained.

275,927. BENZANTHRONE DERIVATIVES. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, August 10, 1926.

Benzanthrone or its derivatives are treated with manganese dioxide in presence of moderately dilute sulphuric acid to obtain products which are soluble in alkali and bisulphite solutions, and yield anthraquinone-1-carboxylic acids by the action of alkaline oxidising agents.

275,943. LAKES. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, August 12, 1926.

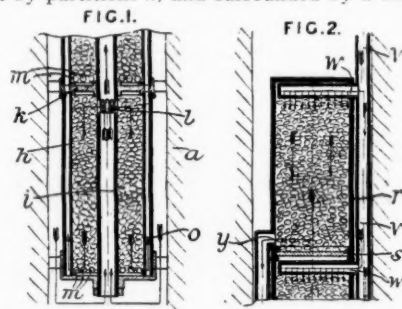
Pigments are obtained by treating primary, secondary, or tertiary aromatic amines which are not basic dyestuffs and are free from acid groups, with complex acids such as phosphotungstic, phosphomolybdic, phosphotungstomolybdic, or silicomolybdic acid. Examples are given.

275,945. Chlorides. I. G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. International Convention date, August 13, 1926. Addition to 259,498.

Specification 259,498 (see THE CHEMICAL AGE, Vol. XV, p. 478) describes the production of anhydrous magnesium chloride by mixing with the oxide substances which render the mass highly porous when heated. This process is now applied to the production of anhydrous chlorides generally.

275,983. CATALYTIC REACTIONS. H. Harter, 8, Theresienstrasse, Wurzburg, Germany. International Convention date, August 10, 1926.

The catalyst is placed in the space between the tubes *h*, *i*, divided by partitions *k*, and surrounded by a tube *o*. The



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reagents, e.g., nitro-hydrogen mixture, pass down around the tube *o* and then up through tube *i* to slots *l*, and then through the catalyst to the outlets *m*, leading to the space between the tubes *o*, *h*. In another form, the catalyst tube *v* is divided by slides *s*, and the inlet *v* carries branches *w* having perforations leading into the catalyst.

LATEST NOTIFICATIONS.

278,324. Manufacture and production of acetaldehyde from gaseous mixtures containing acetylene. I. G. Farbenindustrie Akt.-Ges. September 28, 1926.

278,325. Process for manufacturing dyestuffs. Bensa, F. October 2, 1926.

278,341. Manufacture and production of motor fuels. I. G. Farbenindustrie Akt.-Ges. November 5, 1925.

278,370. Process of extracting clay and other argillaceous raw materials with acids. I. G. Farbenindustrie Akt.-Ges. September 29, 1926.

278,390. Manufacture of condensation products from urea and an alcohol or a ketone. I. G. Farbenindustrie Akt.-Ges. October 4, 1926.

Specifications Accepted with Date of Application

253,950. Tertiary nitriles, Process of producing. I. G. Farbenindustrie Akt.-Ges. June 22, 1925.

255,493. Transforming methane into a carbureting agent similar to petroleum, Process for. H. Spindler. July 18, 1925.

260,577. Cyclotrimethylene-aryl-pyrazolones, Process for the manufacture of. C. Mannich. October 27, 1925.

262,090 and 272,842. Synthetic ammonia, Production of. Omnium des Industries Chimiques. (Procédés Tocco and Landi). November 27, 1925, and June 15, 1926.

262,099. Destructive hydrogenation of moist solid fuels. I. G. Farbenindustrie Akt.-Ges. November 26, 1925.

263,773. Alkyl- and aralkyl derivatives of cyclo-trimethylene-aryl-pyrazolones, Process for the manufacture of. C. Mannich. December 31, 1925.

263,845. Benzanthrone derivatives, Manufacture of. I. G. Farbenindustrie Akt.-Ges. December 30, 1925. Addition to 248,791.

266,744. Crude nitrate of soda, Treatment of. I. G. Farbenindustrie Akt.-Ges. February 25, 1926.

268,301. Zinc oxide, Manufacture of. New Jersey Zinc Co. March 27, 1926.

269,164. Precipitation of heavy metals from ammoniacal solutions, Process for. I. G. Farbenindustrie Akt.-Ges. April 9, 1926.

271,907. Gas, Manufacture of, from heavy oils. C. Chilowsky. July 16, 1925.

277,723. White lead, Manufacture of, by electrolysis. R. S. Carreras. May 17, 1926.

277,756. New intermediate compounds and azo dyestuffs therefrom, Manufacture of. British Dyestuffs Corporation, Ltd., J. Bad-diley, P. Chorley, and R. Brightman. June 25, 1926.

277,769. Utilisation of waste acid liquors in chemical processes. C. A. Klein and R. S. Brown. July 8, 1926.

277,774. Bismuth salts of aryl-arsinic acids, Manufacture of solutions of. A. Haythornthwaite and May and Baker, Ltd. July 16, 1926.

Applications for Patents

Alox Chemical Corporation and Marks, E. C. R. Oxidation of hydrocarbons. 26,464. October 6.

Alox Chemical Corporation and Marks, E. C. R. Paper-sizing agents. 26,465. October 6.

Alox Chemical Corporation and Marks, E. C. R. Artificial shellac. 26,466. October 6.

Alox Chemical Corporation and Marks, E. R. C. Softening agent for nitrocellulose coating-compositions. 26,467. October 6.

Barnard, C. M., and British Alizarine Co., Ltd. Manufacture of dyestuffs, etc. 26,380. October 6.

Böhme Akt.-Ges., H. T. Production of pyridine compounds. 26,447. October 6. (Germany, November 10, 1926.)

Böhme Akt.-Ges., H. T. Treatment of fats, etc. 26,573. October 7. (Germany, November 25, 1926.)

Carpmael, A., and I. G. Farbenindustrie Akt.-Ges. Manufacture of substituted indoles. 26,223. October 4.

Carpmael, A., and I. G. Farbenindustrie Akt.-Ges. Manufacture of white titanate acid. 26,224. October 4.

Carpmael, A., and I. G. Farbenindustrie Akt.-Ges. Manufacture of cyanogen chloride. 26,225. October 4.

Coffey, S. Manufacture of acyl derivatives of beta-ketonic esters and beta-diketones. 26,475. October 6.

Consortium für Elektrochemische Industrie Ges. Manufacture of acetic anhydride. 26,323. October 5. (Germany, October 18, 1926.)

Gas Light and Coke Co. and Hollings, H. Carbonisation of coal, etc. 26,495. October 6.

General Carbonalpa Co. Manufacture of hydrocarbons, etc. 26,606. October 7. (Holland, October 7, 1926.)

Hailwood, A. J., Imperial Chemical Industries, Ltd., and Shepherdson, A. Method of introducing chemicals into rubber, etc., materials. 26,616. October 7.

Hercules Powder Co. Preparation of nitrocellulose. 26,341. October 5. (United States, June 8.)

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Alternating current differential wattmeters. 26,063. October 3.

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of cellulose compounds. 26,064. October 3.

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Separation of oils from mixtures. 26,065. October 3.

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of lubricating, etc., oils. 26,332. October 5.

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Low-temperature carbonisation of fuels. 26,444. October 6.

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of hydrocarbon derivatives, etc. 26,445. October 6.

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Colouring rubber. 26,446. October 6.

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of solutions of organic compounds, etc. 26,705. October 8. (June 10, 1926.)

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of combustible gases from granular fuels. 26,707. October 8.

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Gas producers. 26,708. October 8.

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Apparatus for purifying gases. 26,709. October 8.

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of condensation products from urea, etc. 26,214. October 4. (Germany, October 4, 1926.)

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Process for precipitating viscose solutions. 26,324. October 5. (Germany, October 5, 1926.)

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Hydrogenation of coals, etc. 26,443. October 6. (Germany, October 14, 1926.)

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of chlorine substitution products of 1-amino-2,4-dimethylbenzene. 26,483. October 6. (Germany, October 6, 1926.)

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of cellulose-acetate solutions, etc. 26,564. October 7. (Germany, April 24, 1925.)

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of azo dyestuffs, etc. 26,505. October 7. (Germany, October 22, 1926.)

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Operation of internal-combustion engines with pulverulent fuels. 26,566. October 7.

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Treatment of fibrous materials. 26,706. October 8. (Germany, May 22, 1925.)

Lambert, B., National Processes, Ltd., and Robson, S. Manufacture of sulphuric acid. 26,056. October 3.

Ruzicka, C. Production of cellulose acetate. 26,038. October 3.

Soc. of Chemical Industry in Basle. Process for purifying vat-dyestuffs. 26,482. October 6. (Switzerland, October 6, 1926.)

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.
 ACID BORIC, COMMERCIAL.—Crystal, £34 per ton; powder, £36 per ton.
 ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.
 ACID NITRIC, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.
 ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations: 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.
 AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.
 BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages extra.
 BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.
 BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)
 CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.
 COPPER SULPHATE.—£25 to £25 10s. per ton.
 METHYLATED SPIRIT 61 O.P.—Industrial, 2s. 5d. to 2s. 10d. per gall.; pyridinised industrial, 2s. 7d. to 3s. per gall.; mineralised, 3s. 6d. to 3s. 10d. per gall.; 64 O.P., 1d. extra in all cases; prices according to quantity.
 NICKEL SULPHATE.—£38 per ton d/d.
 NICKEL AMMONIA SULPHATE.—£38 per ton d/d.
 POTASH CAUSTIC.—£30 to £33 per ton.
 POTASSIUM BICHROMATE.—4½d. per lb.
 POTASSIUM CHLORATE.—3½d. per lb., ex wharf, London, in cwt. kegs.
 SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.
 SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.
 SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.
 SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.
 SODIUM ACETATE 97/98%.—£21 per ton.
 SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.
 SODIUM BICHROMATE.—3½d. per lb.
 SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.r. London.
 SODIUM CHLORATE.—2½d. per lb.
 SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.
 SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.
 SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.
 SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.
 SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.
 SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.b. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—7½d. to 8d. per lb. Crude 60's, 2s. 3d. to 2s. 5d. per gall.
 ACID CRESYLIC 99/100.—2s. 6d. to 3s. per gall. 97/99.—2s. 4½d. to 2s. 7d. per gall. Pale, 95%, 2s. 3d. to 2s. 5d. per gall. Dark, 90%, 1s. 9d. to 1s. 10d. per gall.; 95%, 2s. 1d. to 2s. 3d.
 ANTHRACENE.—A quality, 2½d. per unit. 40%, £5 per ton.
 ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7½d. to 8d. per gall.
 BENZOLE.—Crude 65's, 9½d. to 9½d. per gall., ex works in tank wagons. Standard Motor, 1s. 1½d. to 1s. 2½d. per gall., ex works in tank wagons. Pure, 1s. 5d. to 1s. 6d. per gall., ex works in tank wagons.
 TOLUOLE.—90%, 1s. 4d. to 1s. 8d. per gall. Firm. Pure, 1s. 6d. to 2s. per gall.
 XYLOL.—1s. 3d. to 1s. 10d. per gall. Pure, 1s. 4d. to 1s. 5d. per gall.
 CREOSOTE.—Cresylic, 20/24%, 10d. to 11d. per gall.; middle oil, 8d. to 9d. per gall. Heavy, 8½d. to 9d. per gall. Standard specification, 7½d. to 7½d. ex works. Salty, 7d. per gall. less 1½%.
 NAPHTHA.—Crude, 9d. to 10d. per gall. Solvent 90/160, 9½d. to 10d. per gall. Solvent 95/160, 1s. 3d. to 1s. 4d. per gall. Solvent 90/190, 9½d. to 1s. 3d. per gall.
 NAPHTHALENE CRUDE.—Drained Creosote Salts, £5 per ton. Whizzed or hot pressed, £8 per ton.
 NAPHTHALENE.—Crystals, £11 10s. to £13 10s. per ton. Quiet. Flaked, £12 10s. to £13 per ton, according to districts.
 PITCH.—Medium soft, 84s. to 90s. per ton, f.o.b., according to district. Market firm.
 PYRIDINE.—90/140, 5s. 9d. to 6s. 6d. per gall. 90/180, 4s. to 5s. per gall. Heavy, 4s. to 4s. 6d. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:
 ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.
 ACID ANTHRANILIC.—6s. per lb. 100%.
 ACID BENZOIC.—1s. 9d. per lb.
 ACID GAMMA.—4s. 9d. per lb.
 ACID H.—3s. per lb.
 ACID NAPHTHIONIC.—1s. 6d. per lb.
 ACID NEVILLE AND WINTHER.—4s. 9d. per lb.
 ACID SULPHANILIC.—8½d. per lb.
 ANILINE OIL.—7½d. per lb. naked at works.
 ANILINE SALTS.—7½d. per lb. naked at works.
 BENZALDEHYDE.—2s. 3d. per lb.
 BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.
 BENZOIC ACID.—1s. 8½d. per lb.
 o-CRESOL 29/31° C.—5½d. per lb.
 m-CRESOL 98/100%.—2s. 7½d. per lb. Only limited inquiry.
 p-CRESOL 32/34° C.—2s. 8½d. per lb. Only limited inquiry.
 DICHLORANILINE.—2s. 3d. per lb.
 DIMETHYLANILINE.—1s. 11d. per lb.
 DINITROBENZENE.—9d. per lb. naked at works. £75 per ton.
 DINITROCHLOROBENZENE.—£84 per ton d/d.
 DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.
 DIPHENYLAMINE.—2s. 10d. per lb. d/d.
 a-NAPHTHOL.—2s. per lb. d/d.
 B-NAPHTHOL.—11d. to 1s. per lb. d/d.
 a-NAPHTHYLAMINE.—1s. 3d. per lb.
 B-NAPHTHYLAMINE.—3s. per lb.
 o-NITRANILINE.—5s. 9d. per lb.
 m-NITRANILINE.—3s. per lb. d/d.
 p-NITRANILINE.—1s. 8d. per lb.
 NITROBENZENE.—6d. per lb. naked at works.
 NITRONAPHTHALENE.—1s. 3d. per lb.
 R. SALT.—2s. 2d. per lb.
 SODIUM NAPHTHONATE.—1s. 8½d. per lb. 100% basis d/d.
 o-TOLUIDINE.—7½d. per lb.
 p-TOLUIDINE.—2s. 2d. per lb. naked at works.
 m-XYLIDINE ACETATE.—2s. 11d. per lb. 100%.
 N. W. Acid.—4s. 9d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £9 10s. to £10 per ton. Good demand. Grey, £14 10s. to £15 per ton. Liquor, 9d. per gall.
 CHARCOAL.—£6 to £9 per ton, according to grade and locality. Foreign competition severe.
 IRON LIQUOR.—1s. 3d. per gall. 32° Tw. 1s. per gall. 24° Tw.
 RED LIQUOR.—9d. to 10d. per gall.
 WOOD CREOSOTE.—1s. 9d. per gall. Unrefined.
 WOOD NAPHTHA, MISCIBLE.—3s. 11d. to 4s. 3d. per gall. Solvent, 4s. 3d. per gall.
 WOOD TAR.—£4 to £5 per ton.
 BROWN SUGAR OF LEAD.—£40 15s. per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 5½d. per lb., according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.
 ARSENIC SULPHIDE, YELLOW.—1s. 9d. per lb.
 BARYTES.—£3 10s. to £6 15s. per ton, according to quality.
 CADMIUM SULPHIDE.—2s. 6d. to 2s. 9d. per lb.
 CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.
 CARBON BLACK.—5½d. per lb., ex wharf.
 CARBON TETRACHLORIDE.—£45 to £50 per ton, according to quantity, drums extra.
 CHROMIUM OXIDE, GREEN.—1s. 1d. per lb.
 DIPHENYLGUANIDINE.—3s. 9d. per lb.
 INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5½d. to 6½d. per lb.
 LAMP BLACK.—£35 per ton, barrels free.
 LEAD HYPOSULPHITE.—9d. per lb.
 LITHOPONE, 30%.—£22 10s. per ton.
 MINERAL RUBBER "RUBFRON".—£13 12s. 6d. per ton, f.o.r. London.
 SULPHUR.—£9 to £11 per ton, according to quality.
 SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.
 SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.
 THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb. carriage paid.
 THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.
 VERMILION, PALE OR DEEP.—6s. to 6s. 3d. per lb.
 ZINC SULPHIDE.—1s. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.
 ACID, ACETYL SALICYLIC.—2s. 3½d. to 2s. 5d. per lb.
 ACID, BENZOIC B.P.—2s. to 3s. 3d. per lb., according to quantity. Solely ex Gum, 1s. to 1s. 3d. per oz., according to quantity.

ACID, BORIC B.P.—Crystal, 40s. to 43s. per cwt.; powder, 44s. to 47s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—1s. 6½d. to 1s. 7½d. per lb., less 5%.

ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.

ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d. per lb.

ACID, SALICYLIC, B.P. PULV.—1s. 2½d. to 1s. 4d. per lb.; Technical.—1½d. to 1s. per lb. Good demand.

ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.

ACID, TARTARIC.—1s. 3½d. per lb., less 5%.

AMIDOL.—9s. per lb., d/d.

ACETANILIDE.—1s. 6d. to 1s. 8d. per lb. for quantities.

AMIDOPYRIN.—8s. 6d. per lb.

AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity.

AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimed: 1s. per lb.

ATROPINE SULPHATE.—9s. 6d. per oz.

BARBITONE.—5s. 9d. to 6s. per lb.

BENZONAPHTHOL.—3s. 3d. per lb. spot.

BISMUTH CARBONATE.—9s. 9d. to 9s. 10d. per lb.

BISMUTH CITRATE.—9s. 6d. to 9s. 9d. per lb.

BISMUTH SALICYLATE.—8s. 9d. to 9s. per lb.

BISMUTH SUBNITRATE.—7s. 9d. to 8s. per lb.

BISMUTH NITRATE.—5s. 9d. to 6s. per lb.

BISMUTH OXIDE.—13s. 9d. to 14s. per lb.

BISMUTH SUBCHLORIDE.—11s. 9d. to 12s. per lb.

BISMUTH SUBGALLATE.—7s. 9d. to 8s. per lb. Extra and reduced prices for smaller and larger quantities respectively; Liquor Bismuthi B.P. in W. Qts. 1s. 1d. per lb.; 12 W. Qts. 1s. per lb.; 36 W. Qts. 1½d. per lb.

BORAX B.P.—Crystal, 24s. to 27s. per cwt.; powder, 26s. to 29s. per cwt. according to quantity. Carriage paid any station in Great Britain, in ton lots.

BROMIDES.—Potassium, 1s. 9½d. to 1s. 10½d. per lb.; sodium, 2s. to 2s. 1d. per lb.; ammonium, 2s. to 2s. 3d. per lb.; granulated, ½d. per lb. less; all spot. Large quantities at lower rates.

CALCIUM LACTATE.—1s. 2½d. to 1s. 4d. per lb.

CAMPOR.—Refined flowers, 2s. 11d. to 3s. 1d. per lb., according to quantity; also special contract prices.

CHLORAL HYDRATE.—3s. 2d. to 3s. 4d. per lb.

CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.

CREOSOTE CARBONATE.—6s. per lb.

ETHERS.—S.G. 730—1s. 1½d. to 10½d., drums; other gravities at proportionate prices.

FORMALDEHYDE.—£39 per ton, in barrels ex wharf.

GUAIACOL CARBONATE.—4s. 9d. to 5s. per lb.

HEXAMINE.—2s. 3d. to 2s. 6d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. Winchesters, 2s. 11d. per gal. B.P., 10 vols., 2s. 3d. per gal. In carboys. Winchesters, 2s. 11d. to 3s. 9d. per gal.; 20 vols., 4s. 3d. per gal.; Winchesters, 5s. per gal. Special prices for larger quantities.

HYDROQUINONE.—2s. 11d. to 3s. 2d. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.

IRON AMMONIUM CITRATE.—B.P., 2s. 1d. to 2s. 4d. per lb. Green, 2s. 4d. to 2s. 9d. per lb. U.S.P., 2s. 2d. to 2s. 5d. per lb.

IRON PEROCHLORIDE.—20s. to 22s. per cwt., according to quantity

MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.

MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy Commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb., in 1 cwt. lots.

MENTHOL.—A.B.R. recrystallised B.P., 17s. 9d. per lb. net; Synthetic detached crystals, 9s. to 12s. 6d. per lb., according to quantity; Liquid (95%), 11s. 3d. per lb.

MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, 7s. 6d. to 7s. 7d. per lb., levig., 7s. to 7s. 1d. per lb.; Corrosive Sublimate, Lump, 5s. 9d. to 5s. 10d. per lb., Powder, 5s. 2d. to 5s. 3d. per lb.; White Precipitate, Lump, 5s. 11d. to 6s. per lb., Powder, 6s. to 6s. 1d. per lb., Extra Fine, 6s. 1d. to 6s. 2d. per lb.; Calomel, 6s. 4d. to 6s. 5d. per lb.; Yellow Oxide, 6s. 10d. to 6s. 11d. per lb.; Persulph., B.P.C., 6s. 1d. to 6s. 2d. per lb.; Sulph. nig., 5s. 10d. to 5s. 11d. per lb. Special prices for larger quantities.

METHYL SALICYLATE.—1s. 9d. per lb.

METHYL SULPHONAL.—8s. 9d. to 9s. per lb.

METOL.—11s. per lb. British make.

PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.

PARALDEHYDE.—1s. 4d. per lb.

PHENACETIN.—2s. 6d. to 2s. 9d. per lb.

PHENAZONE.—4s. to 4s. 3d. per lb.

PHENOLPHTHALEIN.—6s. 6d. to 6s. 9d. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—98s. per cwt. less 2½%.

POTASSIUM CITRATE.—B.P.C., 1911: 1s. 8d. to 1s. 11d. per lb.; U.S.P.: 1s. 11d. to 1s. 2d. per lb.

POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.

POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb. according to quantity.

POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 6d. per lb., spot.

QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz. bulk in 100 oz. tins.

RESORCIN.—3s. 9d. to 4s. per lb., spot.

SACCHARIN.—55s. per lb.; in quantity lower.

SALOL.—2s. 4d. per lb.

SODIUM BENZOATE, B.P.—1s. 8d. to 1s. 11d. per lb.

SODIUM CITRATE, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb., B.P.C., 1923—2s. to 2s. 1d. per lb. for 1-cwt. lots. U.S.P., 1s. 11d. to 2s. 2d. per lb., according to quantity.

SODIUM FERROCYANIDE.—4d. per lb., carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 5s. per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—90s. to 95s. per cwt. Crystals, 5s. per cwt. extra.

SODIUM SALICYLATE.—Powder, 1s. 8½d. to 1s. 9½d. per lb. Crystal, 1s. 9½d. to 1s. 10½d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.

SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £28 10s. per ton, according to quantity. Delivered U.K.

SULPHONAL.—6s. 9d. to 7s. per lb.

TARTAR EMETIC, B.P.—Crystal or powder, 2s. to 2s. 1d. per lb.

THYMOL.—Puriss., 10s. to 10s. 3d. per lb., according to quantity. Firmer. Natural, 14s. 3d. per lb.

Perfumery Chemicals

ACETOPHENONE.—6s. 6d. per lb.

AUBEPINE (EX ANETHOL), 10s. 6d. per lb.

AMYL ACETATE.—2s. per lb.

AMYL BUTYRATE.—5s. 3d. per lb.

AMYL SALICYLATE.—3s. per lb.

ANETHOL (M.P. 21/22° C.).—5s. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—2s. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.

BENZYL BENZOATE.—2s. 6d. per lb.

CINNAMIC ALDEHYDE NATURAL.—16s. 3d. per lb.

COUMARIN.—9s. 9d. per lb.

CITRONELLOL.—13s. 9d. per lb.

CITRAL.—8s. 3d. per lb.

ETHYL CINNAMATE.—6s. 6d. per lb.

ETHYL PHTHALATE.—2s. 9d. per lb.

EUGENOL.—8s. per lb.

GERANIOL (PALMAROSA).—18s. 6d. per lb.

GERANIOL.—6s. 6d. to 10s. per lb.

HELIOTROPINE.—4s. 9d. per lb.

ISO EUGENOL.—13s. 6d. per lb.

LINALOL.—Ex Bois de Rose, 15s. per lb. Ex Shui Oil, 10s. 6d. per lb.

LINALYL ACETATE.—Ex Bois de Rose, 18s. 6d. per lb. Ex Shui Oil, 14s. 6d. per lb.

METHYL ANTHRANILATE.—8s. 6d. per lb.

METHYL BENZOATE.—4s. per lb.

MUSK KETONE.—35s. per lb.

MUSK XYLOL.—8s. per lb.

NEROLIN.—4s. 6d. per lb.

PHENYL ETHYL ACETATE.—12s. per lb.

PHENYL ETHYL ALCOHOL.—10s. 6d. per lb.

RHODINOL.—32s. 6d. per lb.

SAFROL.—1s. 6d. per lb.

TERPINEOL.—1s. 8d. per lb.

VANILLIN.—17s. to 17s. 6d. per lb.

Essential Oils

ALMOND OIL.—11s. per lb.

ANISE OIL.—2s. 9d. per lb.

BERGAMOT OIL.—28s. per lb.

BOURBON GERANIUM OIL.—14s. 6d. per lb.

CAMPOR OIL.—75s. per cwt.

CANANGA OIL, JAVA.—18s. per lb.

CINNAMON OIL LEAF.—6d. per oz.

CASSIA OIL, 80/85%.—7s. 3d. per lb.

CITRONELLA OIL.—Java, 1s. 10d. per lb., c.i.f. U.K. port for shipment over 1928. 1s. 7½d. per lb., prompt shipment from Java. Ceylon, pure, 1s. 8d. per lb.

CLOVE OIL.—5s. 6d. per lb.

EUCALYPTUS OIL, AUSTRALIAN.—2s. 3d. per lb.

LAVENDER OIL.—Mont Blanc, 38/40%, Esters, 17s. 6d. per lb.

LEMON OIL.—7s. 1d. per lb.

LEMONGRASS OIL.—4s. 6d. per lb.

ORANGE OIL, SWEET.—11s. 3d. per lb.

OTTO OF ROSE OIL.—Anatolian, 30s. per oz. Bulgarian, 75s. per oz.

PALMA ROSA OIL.—9s. 3d. per lb.

PEPPERMINT OIL.—Wayne County, 15s. 9d. per lb.; Japanese, 8s. per lb.

PETITGRAIN OIL.—7s. 6d. per lb.

SANDALWOOD OIL.—Mysore, 26s. 6d. per lb.; 90/95%, 16s. 6d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, October 13, 1927.

THERE has been an increased volume of business passing during the past week and inquiry is much more satisfactory, especially for forward account. Prices on the whole are unchanged and very firm. Export inquiry is fair.

General Chemicals

ACETONE maintains its advanced figure and is quoted at £63 per ton for small quantities, with slight variations for larger orders.
ACID ACETIC is in good demand for home account, price remaining unchanged at about £37 to £38 for 80% grade. Export inquiry is rather quieter.
ACID FORMIC is in fair demand for home and export at unchanged prices.
ACID LACTIC is in steady request at £40 to £43 per ton for 50% by weight pale qualities. Export demand is improving.
ACID OXALIC is in good demand and price remains firm at about £30 per ton. The forward position is also very firm.
ALUMINA SULPHATE is steady in price with an active demand, especially for forward business.
AMMONIUM CHLORIDE is still a disappointing market with price easy.
BARIUM CHLORIDE is steady and little more inquiry is being received. Spot price remains about £8 10s. to £9 per ton.
COPPER SULPHATE.—Firm with active inquiry.
EPSOM SALTS are steady at about £4 7s. 6d. per ton, with a fair demand.
FORMALDEHYDE.—Demand is increasing and price unchanged at £40 per ton.
LEAD ACETATE is steady at about £42 10s. for white and £1 per ton less for brown. Demand is increasing.
LEAD NITRATE is unchanged.
LIME ACETATE.—The demand is increasing with price a little firmer.
METHYL ACETONE is quiet at about £54 to £55 per ton.
POTASSIUM CHLORATE is in very great request on export account and price is advancing. Home trade demand remains quiet and price is steady.

South Wales By-Products

THERE is no material change in South Wales by-product activities. Pitch is expected to improve as a result of the dry weather, and many municipal authorities are reported to be contemplating the resumption of road work, held up by the rainy summer. Creosote remains in good demand at 7d. to 7½d. f.o.r. maker's works, and 10d. to 1s. gallon d/d. in barrels. Crude naphthalene remains quiet with prices varying from £4 10s. to £5 per ton. The demand for crude tar has strengthened and prices range between 60s. and 65s. per ton. Heavy and solvent naphtha has a quiet market, buyers apparently not being eager to enter into contracts at the ruling price of 9d. to 10d. per gallon f.o.r. maker's works. Tars are quiet. Refined tars are 8½d. to 9d. per gallon for coke-oven tar; 8d. to 8½d. per gallon gasworks tar. The demand for cokes and patent fuel has eased, but the exports continue to be good. All patent fuel works are kept busy, the export prices being 23s. 6d. to 24s. 6d. f.o.b.

Nitrogen Products

Export.—During the last week the sulphate of ammonia market has remained firm and prices continue unchanged—£9 8s. per ton, f.o.b. U.K. port, in single bags for October shipments with higher prices for shipments at later periods. The demand from the Continent remains quiet, but the Far East and the sugar growing colonies are still buyers.

Home.—There are no changes to report in the home market; producers are making small sales at scale prices.

Nitrate of Soda.—The improvement mentioned in our last report has been maintained, and considerable sales are being made on the basis of 17s. 6d. per metric quintal, f.a.s. Chile. No reports have reached us concerning production. The continued optimism of nitrate producers has been reflected in a further rise in share values.

MR. JOHN WYLDE, of Menston, near Leeds, who is in his eighty-fourth year, formerly general manager of the tar department of Brotherton and Co., Ltd., celebrated his diamond wedding on Tuesday.

OVERCOME BY BENZINE FUMES at the chemical works of Quibell Brothers, Ltd., John Henry Taylor, of Newark, aged 54, died on October 3, while engaged in degreasing operations.

POTASSIUM PERMANGANATE is only in fair request and price unchanged at 6½d. to 6¼d. per lb., for B.P.

POTASSIUM PRUSSATE.—A steady business is being done at the unchanged price of £60 to £62 per ton.

SODIUM ACETATE is firmer and demand active. The price is inclined to rise for forward position with spot price at £18 10s. per ton.

SODIUM BICHROMATE is unchanged at 3½d. per lb., and in good request.

SODIUM CHLORATE is steady at about £25 per ton, with forward position firm.

SODIUM HYPOSULPHITE is unchanged.

SODIUM NITRITE.—No special features to report, the market being quiet at £19 10s. per ton.

SODIUM PRUSSATE is firm at about 4½d. per lb., with supplies on the short side.

SODIUM SULPHIDE.—Little business is being done and price is easy. ZINC SULPHATE is unchanged in price with good demand.

Coal Tar Products

There is little change to report in the values of coal tar products from last week, the market remaining quiet.

90's BENZOL remains unchanged, and is quoted at about 1s. 4d. to 1s. 5d. per gallon on rails, while the motor quality is quoted at 1s. 1½d. to 1s. 2½d. per gallon.

PURE BENZOL is quoted at 1s. 7½d. to 1s. 8½d. per gallon on rails.

CREOSOTE OIL remains firm, being quoted at about 7½d. per gallon on rails in the North, while the price in London is about 8½d. per gallon.

CRESYLIC ACID is worth about 2s. 2d. per gallon, ex works, for the pale quality, 97/99%, and the dark quality, 95/97%, is worth about 1s. 11d. per gallon.

SOLVENT NAPHTHA is quoted at about 10d. per gallon on rails.

HEAVY NAPHTHA is unchanged, at about 11d. per gallon on rails.

NAPHTHALENES are steady, at about £6 15s. to £7 per ton for the 74/76 quality, and about £8 to £8 15s. per ton for the 76/78 quality.

PITCH remains steady and although there is very little business being transacted the price is nominally 80s. to 85s. f.o.b.

Rare Metals for Laboratories and for Manufacturers

FROM Johnson, Matthey and Co., Ltd., of Hatton Garden, London, we have received two booklets which complete the present series of recently published brochures issued by this firm. The first of the two (No. 6) for Chemical Laboratories deals with platinum and platinum apparatus for use in laboratories. Besides being refiners and suppliers of platinum and other precious metals used in their apparatus, the firm is well fitted to supply rare metal and compounds for the purposes of research work. The latest machinery has been installed at their works, and they are capable of undertaking the most intricate and delicate work. Among the apparatus supplied are crucibles of palladium, gold and platinum alloys as well as dishes in these materials. Gauges, nozzles, tweezers, electrodes, and other apparatus are supplied, and nozzles for artificial silk are also made. The second booklet (No. 7) is of interest to manufacturing chemists and chemical manufacturers, and contains details of platinum and palladium catalysts and of photo-materials. Special sections are devoted to iridium, ruthenium, and osmium and their compounds, selenium compounds, acids silico-tungstic and phospho tungstic, and the rarer base metals such as tellurium, molybdenum, and manganese. Details are given of the recovery of rare metals from residues which is carried out by the firm.

TWO WORKMEN AND A POLICEMAN were fatally gassed in an electric inspection chamber at Notting Hill on October 7, a police surgeon stating at the inquest on Monday that he thought death was caused by carbon dioxide with carbon monoxide as a strong contributory factor. A verdict of accidental death was recorded.

SIR JOSIAH STAMP, a member of the directorate of I.C.I. and of the L.M.S. Railway, stated, in the course of a speech at the Birmingham Chamber of Commerce on Thursday, October 6, that "business men must realise that by dropping the price level they had added materially to the National Debt."

WEST (BUTCHERS), LTD., of West Smithfield, London, were fined 20s. at Tottenham on October 6 under the new preservatives regulations for selling meat containing sulphur dioxide.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

Glasgow, October 11, 1927.

THERE has been a marked improvement in volume of inquiry going around the heavy chemical market during the past week, inquiry for export still being well maintained. Prices remain on about the same level as last reported.

Industrial Chemicals

ACETONE, B.G.S.—Quoted £58 to £61 per ton, ex store, according to quantity.

ACID ACETIC.—98/100%, glacial, £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80%, pure, £37 10s. per ton, ex wharf; 80%, technical, £37 10s. per ton, ex wharf.

ACID BORIC.—Crystal, granulated or small flakes, £34 per ton; powder, £36 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—Rather easier at about 8d. per lb., f.o.b. U.K. ports.

ACID CITRIC, B.P. CRYSTALS.—Foreign material quoted 1s. 6½d. per ton, less 5%, ex wharf.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. 9d. per carboy; dearsenicated quality, 6s. 3d. per carboy, ex works.

ACID NITRIC, 80%.—Quoted £23 5s. per ton, ex station, full truck loads.

ACID OXALIC.—Continental material unchanged at 3½d. per lb., ex wharf; spot material quoted 3½d. per lb., ex store.

ACID SULPHURIC, 144°.—£3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—In little demand, and price unchanged at about 1s. 2½d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE, 17/18%, IRON FREE.—Spot material quoted £5 12s. 6d. per ton, ex store. On offer for early delivery at £5 5s. per ton, c.i.f. U.K. ports.

ALUM POTASH.—Lump quality quoted £8 5s. per ton, c.i.f. U.K. ports; crystal meal, 10s. per ton less. Lump quality on spot offered at £9 per ton, ex store.

AMMONIA ANHYDROUS.—Unchanged at about 9d. per lb., carriage paid, containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks, delivered or f.o.b. U.K. ports.

AMMONIA LIQUID, 880°.—Unchanged at about 2½d. to 3d. per lb., delivered, according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of English manufacture unchanged at £23 to £24 per ton, ex station. Continental about £19 10s. per ton, c.i.f. U.K. ports. Fine white crystals of continental manufacture now rather dearer at £17 10s. per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—Spot material unchanged at about £21 5s. per ton, ex store. Quoted £20 7s. 6d. per ton, ex wharf, prompt dispatch from mines.

BARIUM CARBONATE, 98/100%.—Continental material unchanged at about £7 10s. per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE, 98/100%.—Large white crystals quoted £6 17s. 6d. per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—Contract price to consumers £8 per ton, ex station, minimum 4-ton lots. Spot material, 10s. per ton extra. Continental on offer at £7 5s. per ton, ex wharf.

BORAX.—Granulated, £19 10s. per ton; crystals, £20 per ton; powder, £21 per ton, carriage paid U.K. ports.

CALCIUM CHLORIDE.—English manufacturers' price unchanged at £5 to £5 5s. per ton, ex station, with a slight reduction for contracts. Continental offered at £3 15s. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works or £4 12s. 6d. per ton, f.o.b. U.K. ports, for export.

COPPER, SULPHATE.—British material now on offer at £23 15s. per ton, ex store, spot delivery. Continental quoted £22 10s. per ton, ex wharf.

FORMALDEHYDE, 40%.—Unchanged at £38, per ton, c.i.f. U.K. ports. Spot material quoted at £39 5s. per ton, ex store.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental quoted £2 15s. per ton, c.i.f. U.K. ports.

LEAD, RED.—Imported material on offer at about £28 per ton, ex store.

LEAD, WHITE.—Quoted £28 10s. per ton, ex store.

LEAD ACETATE.—White crystals on offer from the Continent at £40 per ton, c.i.f. U.K. ports; brown, about £38 15s. per ton, c.i.f. U.K. ports. Spot material on offer at £43 5s. per ton, ex store.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store, in moderate demand.

POTASH, CAUSTIC.—88/92%, solid quality quoted £28 15s. per ton, c.i.f. U.K. ports, minimum 15-ton lots. Under 15-ton lots, £29 10s. per ton; liquid, £15 per ton, minimum 15-ton lots. Under 15-ton lots, £15 7s. 6d. per ton, c.i.f. U.K. ports.

POTASSIUM BICHROMATE.—Unchanged at 4½d. per lb., delivered.

POTASSIUM CARBONATE, 96/98%.—Unchanged at £27 5s. per ton, ex wharf, prompt shipment. Spot material quoted £28 10s. per ton, ex store; 80/85%, calcined quality on offer at £20 10s. per ton, c.i.f. U.K. ports.

POTASSIUM CHLORATE.—Continental prices advanced. Powdered quality now quoted £25 7s. 6d. per ton, c.i.f. U.K. ports; crystals, 30s. per ton extra.

POTASSIUM NITRATE.—Quoted £20 per ton, c.i.f. U.K. ports. Spot material available at £21 per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 6½d. per lb., ex store, spot delivery.

POTASSIUM PRUSSIAN (YELLOW).—Unchanged at about 6½d. per lb., ex store, spot delivery. Offered from the Continent at 6½d. per lb., ex wharf.

SODA CAUSTIC.—Powdered, 98/99%, £19 7s. 6d. per ton; 76/77%, £15 10s. per ton; 70/72%, £14 10s. per ton, carriage paid station. Minimum, 4 ton lots on contract. Spot material, 10s. per ton extra.

SODIUM ACETATE.—English material now quoted £21 per ton, ex store. Continental on offer at £17 5s. per ton, c.i.f. U.K. ports.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3½d. per lb., delivered buyers' works.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station; powdered or pea quality, £1 7s. 6d. per ton; alkali, 58%, £8 12s. 3d. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £9 10s. per ton, ex store. Minimum 4-ton lots. Continental on offer at about £8 2s. 6d. per ton, ex wharf, prompt shipment. Pea crystals of British manufacture quoted £15 5s. per ton, ex station, 4-ton lots.

SODIUM NITRITE 100%.—Quoted £19 10s. per ton, ex store.

SODIUM PRUSSIAN (YELLOW).—In moderate demand, and price unchanged at about 4½d. per lb., ex store. Offered for prompt shipment from the Continent at 4½d. per lb., ex wharf.

SODIUM SULPHATE (SALTCAKE).—Price for home consumption £3 7s. 6d. per ton, ex works.

SODIUM SULPHIDE.—Prices for English material as follows: 60/62%, solid, now £10 10s. per ton; broken, £11 10s. per ton; flake, £13 5s. per ton; crystals, 31/34%, £7 10s. per ton to £8 5s. per ton, according to quantity delivered your works, minimum 4-ton lots on contract. Prices for spot delivery, 5s. per ton higher for solid; 2s. 6d. per ton for crystals. Offered from Continent at about £9 5s. per ton, c.i.f. U.K. ports. Broken, 15s. per ton extra.

SULPHUR.—Flowers, £12 per ton; roll, £10 15s. per ton; rock, £10 12s. 6d. per ton; floristella, £9 10s. per ton; flake, American, £9 5s. per ton; ex store. Prices nominal.

ZINC CHLORIDE.—British material, 98/100%, quoted £24 15s. per ton, f.o.b. U.K. ports; 98-100%, solid, on offer from the Continent at about £21 15s. per ton, c.i.f. U.K. ports; powdered, 20s. per ton extra.

ZINC SULPHATE.—Continental material quoted £11 15s. per ton, ex wharf.

NOTE.—The above prices are for bulk business, and are not to be taken as applicable to small parcels.

Chemical Society Meeting

An ordinary scientific meeting of the Chemical Society will be held on Thursday, October 20, at 8 p.m., at Burlington House, Piccadilly, London. The following papers will be read: "Studies of Dynamic Isomerism. Part XXIV. Neutral salt action in mutarotation," by T. M. Lowry and G. F. Smith; "Studies of Dynamic Isomerism. Part XXV. The mechanism of catalysis by acids and bases," by T. M. Lowry; "10-Chloro-5:10-dihydrophenarsazine and its derivatives. Part V. The general method of synthesis and determination of constitution," by C. S. Gibson and J. D. A. Johnson; and "On Active Nitrogen. Part IV. The independence of the afterglow and chemical properties of active nitrogen," by E. J. B. Willey.

Manchester Chemical Market

(FROM OUR OWN CORRESPONDENT.)

Manchester, October 13, 1927.

A QUIETLY steady business in chemical products on the Manchester market has been transacted during the past week, the slight improvement in the extent of buying operations recorded during the last few weeks continuing. Home consumers are displaying rather more interest in the question of forward deliveries, although, as before, the bulk of the current business is for supplies to meet immediate or early needs. The demand on this market for chemicals for shipment is on much the same quiet scale as at last report.

Heavy Chemicals

Chlorate of soda appears to be a little steadier than it has been of late, although buying interest is still rather subdued; offers to-day range from 2½d. to 2¾d. per lb. Hyposulphite of soda is maintained at about £9 15s. per ton for the commercial quality and £16 10s. for the photographic, but the demand for this just now is slow. For caustic soda, however, a fairly satisfactory flow of business is being experienced, and prices are firm at from £14 10s. to £16 10s. per ton, according to quality. In the case of prussiate of soda there has been rather more doing in this section of the market, and at about 4½d. per lb. values are fractionally steadier. Quotations for phosphate of soda are well held at about £12 15s. per ton, and a fair demand for this material has been reported during the past week. Nitrite of soda is in quietly steady request with current offers ranging from £19 to £19 5s. per ton. Alkali keeps firm at round £6 15s. per ton, and a moderate demand for this has been met with. A quiet trade is passing in the case of saltcake at from £3 10s. to £3 15s. per ton, but Glauber salts continue quiet with offers at up to £3 7s. 6d. per ton. The gradual decline in sulphide of soda which has been going on for some weeks now has apparently come to an end, for the time being at all events, and a limited business has been done at prices which are much the same as a week ago, namely, £10 5s. per ton for 60 to 65 per cent. concentrated solid and £8 5s. to £8 10s. per ton for the commercial quality. Bichromate of soda keeps steady and meets with a moderate amount of inquiry at 3d. per lb. Bicarbonate of soda is in fair request and prices are firm at round £10 10s. per ton.

Among the potash compounds yellow prussiate is about unchanged on the week at 6½d. per lb., and rather more inquiry has been reported in this section of the market. Permanganate of potash, however, is quiet and easy at 5d. to 5½d. per lb. for the commercial grade, and about 6½d. per lb. for the B.P. Chlorate of potash is moving off in limited quantities at 2½d. per lb. Caustic potash is on offer at from £30 to £31 per ton, and buying interest continues on a fair scale. For carbonate of potash quotations are steady at about £26 15s. per ton, and a quiet business is being put through.

A moderate trade is being done in the case of arsenic, and prices maintain their recent firmness, current offers of white powdered, Cornish makes, ranging from £18 5s. to £18 10s. per ton at the mines. The demand for sulphate of copper during the week has been on rather quiet lines, but quotations are fairly steady at about £24 10s. per ton, f.o.b. Acetate of lime is showing indications of increased firmness, largely because of the scarcity of offers for prompt delivery, grey being quoted at up to £16 10s. per ton, and brown at £10 to £10 5s. Acetate of lead is inactive, and the tendency is easy at £41 to £41 10s. per ton for the white and £39 for the brown material. Nitrate of lead meets with a limited demand at £37 15s. per ton.

Acids and Tar Products

Oxalic acid is steady at 3½d. to 3¾d. per lb., and a moderate business is being put through. More or less similar conditions obtain in respect of acetic acid, with glacial quoted at £67 per ton, and the 80 per cent. commercial quality at about £36 10s. per ton. Citric acid, however, is in limited demand, and is easy at 1s. 6½d. per lb., whilst for tartaric acid inquiry is inactive, and here also the tendency is easy at 1s. 2½d. to 1s. 3d. per lb.

Inquiry for pitch is on a moderate scale, with current quotations for export at from £4 to £4 2s. 6d. per ton, f.o.b. Creosote oil is firm at about 7½d. per gallon, and a fair amount of interest in this material is being shown. Carboic acid crystals are quiet at 7½d. per lb., with crude in better demand at 2s. 6d. per gallon.

Company News

RECKITT AND SONS.—A quarterly dividend of 3½ per cent. is announced on the ordinary shares.

BROKEN HILL PROPRIETARY CO., LTD.—A half-yearly dividend of 1s. per share has been declared payable on November 9.

AMALGAMATED ZINC (DE BAVAYS).—A dividend is announced at the rate of 8 per cent. per annum for the six months ended August 31.

ERINOLD, LTD.—The directors recommend a final dividend of 4 per cent. (actual), less tax, making a dividend of 7 per cent., less tax, for the year ended August 31, 1927.

BABCOCK AND WILCOX, LTD.—The directors have declared an interim dividend on the ordinary shares of 7 per cent., tax free, for the year ending December 31, 1927.

RIO TINTO CO., LTD.—Out of the estimated profits of the year, the directors have declared a half-year's dividend of 2s. 6d. per share on the 5 per cent. preference shares, and an interim dividend of 20s. per share on the ordinary shares, both less tax, payable on November 1 next.

ELECTROLYTIC ZINC CO. OF AUSTRALASIA, LTD.—After transferring £145,000 to reserve for depreciation, the gross profit for the year ended June 30 was £504,461, and the net profit, after taking into account profit and loss items, including £41,036 for land and income taxes, was £390,077. This, added to £182,686 brought forward, made available £572,763. Debenture sinking fund reserve takes £12,100, there has been written off investigational research and general development account £20,000, placed towards new plant from profits of year under review £40,000, and dividends Nos. 10 and 11 require £312,000, leaving a balance carried forward of £188,663. Since close of period dividend No. 12, absorbing £156,000, has been paid on all preference and ordinary shares.

Tariff Change

CZECHOSLOVAKIA.—In virtue of a recent Order, residues obtained from the distillation of crude mineral oils containing paraffin, solid dark brown, free from crystals, having a melting point over 60° C., may be imported duty free for use in the manufacture of ceresine.

Hull City Analyst's Report

IN his annual report just issued, the Hull City Analyst states that nearly 7,000 samples and specimens had passed through the laboratory during the year, which represented a large increase in the numbers both of food samples and bacteriological specimens. There had been a decrease in the percentage of adulterated foods recorded. The highest percentages of adulteration in the food samples examined occurred in shredded suet (44.4 per cent.), bread and butter (41.7), cheese (15.4), margarine (7.7), milk (5.3), vinegar (10.0), spirits (4.0), and prescriptions (22.2). The average for the year was 4.6 per cent. of the food examined, as compared with 6.2 per cent. last year.

Among examinations undertaken was one for the City Police of some pieces of much charred paper, which it was thought might be the remains of burnt Treasury notes, and which were recovered by the police under suspicious circumstances. The opinion formed after subjecting this material to several chemical and microscopical tests was that the ashes were those of a plain thin paper without any written or printed characters.

Cerebos Capitalisation Proposal Partially Rejected

AT an extraordinary general meeting of Cerebos, Ltd., held at Newcastle-on-Tyne on October 6, for the purpose of increasing the capital of the company, it was decided to increase the capital to £400,000 by the issue of 100,000 £1 ordinary shares. A proposal to capitalise to £100,000 of the undivided profits and to distribute them as a bonus to the ordinary shareholders, in the proportion of one share to three, was carried, but in view of the rejection of the proposal of the chairman, Sir W. M. Collins, to increase the capital to £600,000, the resolution that the directors be entitled to apply for and have allotted at par 30,000 ordinary shares of the company was not submitted.

201/3/39

COMBATING CORROSION

When you plan to put in new plant—whatever it may be—a mixer—an evaporating pan—any form of chemical equipment—corrosion will occupy a prominent, if not the most important, place in your calculation.

FIRTH "STAYBRITE"

Here, there, and everywhere in the minds of chemical engineers FIRTH STAYBRITE is eliminating the calculations, the doubts as to the useful life of plant—just because in so many cases it does away once and for all with the bogey of corrosion. No metal can substantiate the claim to a longer or more useful list of acids, alkalies or conditions against which it is immune from corrosive attack.



FIRTH "STAYBRITE"

(the new super-rustless and super-malleable steel) has a yield point of about 15 tons per square inch and an elongation of 55% to 70%. This exceptional ductility is combined with maximum corrosion-resisting qualities, which it possesses to a remarkable degree. It may be cold-pressed to a degree far in advance of the so-called "Stainless Iron," and, moreover, it presents no difficulties in manipulation, since it can be welded, soldered, brazed and riveted without trouble. Firth "Staybrite" can be supplied as Sheets, Bars, Rods, Plates, Tubes, Sections, Wire Forgings and Castings.

The photograph shows a Chemical Shovel made by Leedham & Heaton, Ltd., Armley Road, Leeds, of Firth "Staybrite," which has been used for two years for dealing with Copper Sulphate Crystals, and has outlasted 24 Ordinary Blades and 15 wooden handles.

THOS. FIRTH & SONS, LIMITED

SHEFFIELD

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

PREMIER DRUG CO., LTD., Fairy Hill Works, Manwood Street, Hightown, Manchester. (C.C., 15/10/27.) £34 11s. 6d. July 11.

WOODBROOK DRUG CO., Vale Place, Merridale Street, Wolverhampton. (C.C., 15/10/27.) £12 15s. September 6.

Receiverships

LEICESTER PAPER STAINING CO., LTD. (R., 15/10/27.) J. N. Godkin, Incorporated Accountant, of 8, 9, 10, De Montford Chambers, Horsefair Street, Leicester, ceased to act as receiver or manager on September 27, 1927.

RADIUM PREPARATIONS, LTD. (R., 15/10/27.) C. E. Smith, of 43, Old Queen Street, Westminster, ceased to act as receiver or manager on September 30, 1927.

London Gazette, &c.

Companies Winding Up Voluntarily

RUSTPROOF PROCESSES, LTD. (C.W.U.V., 15/10/27.) H. A. Crowe, 1, Tanfield Court, Temple, E.C.4, solicitor, appointed as liquidator, October 3. Meeting of creditors, October 18, 1927, at 1, Tanfield Court, Temple, London, E.C.4, at 2 p.m.

SOCIETE FRANCAISE DE PETROLE, LTD. (C.W.U.V., 15/10/27.) By special resolution passed September 9, confirmed September 30. R. D. G. Morris, of Kingsway House, 103, Kingsway, London, W.C.2, appointed liquidator, and authorised to distribute amongst the contributories the 500,000 shares of 2s. each in the capital of Gold Coast Petroleum, Ltd., agreed to be allotted to the Society.

UNIVERSAL CHEMICAL CO., LTD. (C.W.U.V., 15/10/27.) By special resolution, September 20, confirmed October 5, A. E. Spencer, 1, Finsbury Square, London, E.C.2, appointed as liquidator. Meeting of creditors at the offices of Herbert Oppenheimer Nathan and Vandyk, 1, Finsbury Square, London, E.C.2, on Monday, October 24, at 11 a.m. (All debts have been or will be paid in full.)

Notice of Intended Dividend

MARKHAM, James Hanby, trading as WATSON, WALKER AND QUICKFALL, Sheepscar Chemical Works, Leeds, manufacturing chemist, and also trading as A. J. BARBOUR AND CO., at Sheepscar Chemical Works, Leeds, as horticultural chemist. Last day for receiving proofs, October 22, Trustees, T. Coombs, Oxford Chambers, Oxford Place, Leeds; T. A. Stoker, Pearl Chambers, East Parade, Leeds.

New Companies Registered

GRIEVE AND GORDON, LTD., 7, Burnley Road, Dollis Hill, London, N.W.10. Registered October 5. Nom. capital, £6,000 in 5,350 10 per cent. non-cumulative preference shares of £1 each and 13,000 ordinary shares of 1s. each. To acquire the eucalyptus oil specialities business known as Grieve and Gordon. Directors: G. G. Gordon and W. S. Wright.

ORMUL PRODUCTS, LTD., 6, Queen Street Place, London, E.C.4. Registered as a "private" company on October 7. Nom. capital, £50,000 in £1 shares. To adopt an agreement with the British Burmah Petroleum Co., Ltd., to manufacture and sell emulsions, emulsified products, and emulsifying compounds in use in various manufacturing and technical processes, *inter alia*, emulsions of petroleum and other hydrocarbon materials, tars, bitumens, asphalts, and animal and vegetable oils, manufacturers of soaps, paints, varnishes, etc.

British-Made Filter Papers

We have received a folder and price list illustrative of the Ford "428 Mill" filter papers and pulps manufactured by T. B. Ford, Ltd., of Snakeley Mill, Loudwater, Buckinghamshire. In filter papers, examples are given of 17 varieties—"Ford 'A'" to "Ford 'Q,'" notes being given in each case of the particular work to which the paper is suited. For example, "A" is described as a thin, grey, soft, fast filter paper of good quality, recommended where a cheap fairly rapid paper is required, and suitable for general commercial work and useful with filter presses in conjunction with cloth; "J" is described as a smooth white filter paper of medium substance and close texture, useful as a qualitative paper for students and general work; and so on. In addition, higher grade paper is supplied under the names Ford "C. No. 1," "C. No. 2," and "C. No. 4." "C. No. 2," for example, is described as an especially high-grade paper of accurately determined low ash weight, which is strongly recommended for both quantitative and qualitative work. These various papers are supplied in circles and sheets. A survey of the list indicates its representative nature, paper being supplied for every possible purpose. Ford filter pulps are offered both plain and mixed with a percentage of asbestos. These pulps are extensively used for the clarification of beverages, gelatines, etc., have great filtering capacity, and for most purposes can be washed and used repeatedly. Attention may finally be drawn to the special oil filter paper (suitable for the filtration of transformer oil in power stations, etc.) supplied by the firm.

General Meeting of Glass Technology Society

The general meeting of the Society of Glass Technology will be held in the applied science department, Sheffield University, on Wednesday, October 19, at 2.30 p.m. The following papers will be read and discussed: "Opal Glass—Crystal Growth and Impact Brittleness," by J. F. Hyslop; "The Birmingham Glass Trade, 1740–1833," by F. Buckley; and "The Detection of Selenium in Decolourised Bottle Glasses," by E. J. C. Bowmaker and J. D. Cauwood. The meeting will be part of the opening functions of the 1927–1928 session, which will cover October 18 and 19. On the evening of October 18 a dinner will be held at the King's Head Hotel. On the morning of October 19 a visit will be paid to the glass works of Beatson, Clark and Co., Ltd., at Rotherham, where two recently-erected furnaces will be inspected.

Nickel Mine Collapse

With regard to the collapse (reported in the last issue of THE CHEMICAL AGE) of the nickel mine at Worthington, Ontario, the Mond Nickel Co. has made arrangements to employ about 170 workers at another mine in the Sudbury district. The subsidence now appears to have ended. According to a statement issued by the Provincial Department of Mines, the collapse was not unexpected. The section of the mine which collapsed had been under supervision for some time by Government inspectors, and all precautions had been taken to prevent loss of life. The workings will, apparently, be abandoned.

Benn Brothers' Other Journals

THE CABINET MAKER.—Furniture shipments in September; International Motor Exhibition; Notes from the Home Journals.

THE ELECTRICIAN.—"Shop Window Lighting," by W. J. Jones; "How I Would Sell Washing Machines," by Mrs. Christine Frederick; "Training Electrical Engineers," by A. M. Sillar; Census of Production.

THE FRUIT GROWER.—Mechanical Testing of Fruit Maturity; "Selling Charges," by E. W. Roach; Standardised Marketing Movement.

GARDENING ILLUSTRATED.—The Quest of the Unusual in Iris; The Fruit Store; Flowering Shrubs at Thorpe Hall, Essex.

THE GAS WORLD.—The Governing of the Gas Supply; Educating the Coming Gas Engineer; Extensions at Cambridge Gasworks.

THE HARDWARE TRADE JOURNAL.—The Story of Stainless Steel; Electric Welding in Hardware Production; Marking of Imported Wire Nails; The Royal Metal Trades Pension and Benevolent Society: 99th Anniversary Festival.

THE TIMBER TRADES JOURNAL.—Congestion at the London Docks; Soft wood supplies in North West Europe; Finnish Saw Mills and State Forests; The Importance of Levelling Saws.

